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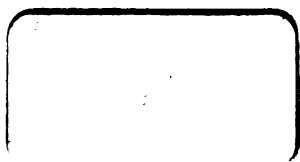
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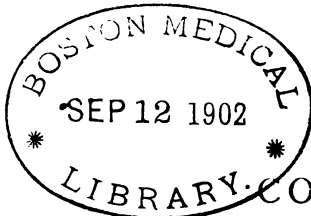


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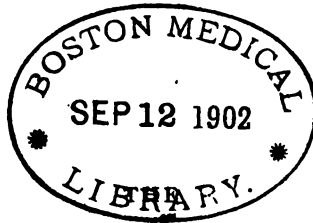
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BIRMINGHAM MEDICAL REVIEW.

JANUARY, 1902.

ORIGINAL COMMUNICATIONS.

CLINICAL LECTURE ON ATONIC DYSPEPSIA.*

BY ALFRED H. CARTER, M.D., M.Sc., F.R.C.P.
SENIOR PHYSICIAN TO THE QUEEN'S HOSPITAL

Gentlemen,

I propose to speak to you to day about a common form of indigestion, of which the chief feature is atony or weakness of the muscular coat of the stomach, and to which the name of gastric myasthenia is often applied. You should understand that normal digestion depends upon the co-operation of three forms of activity—chemical, mechanical, and nervous. The first of these is related to secretion, the second to the muscular coat of the stomach, and the third to the nervous system by which both of the former are actuated and controlled. In practice we find secretory, motor, and nervous disturbances are very generally combined; but at the same time it often happens that one or other form of disturbance predominates, so as to give a special type to the gastric disorder, and thus to justify—for practical purposes—clinical distinction. Atony of the stomach, then, is in the main a motor disorder, characterised by muscular weakness of the organ, and consequent inability to discharge its contents into the bowel within the normal limit of time. It is this delay of food in the stomach to which the

* Delivered at the Queen's Hospital, Birmingham, December 7th, 1901.

symptoms of gastric atony are due. As a result of such delay, the later meals of the day are taken before the stomach has properly disposed of those which have gone before. In ordinary cases, the longer interval which separates the last meal of one day from the first meal of the next, is sufficient to allow the stomach to be completely emptied ; but in severe cases, it may be insufficient for this to take place, and the consequence is that the stomach is never empty, the contents are apt to ferment, and the cavity of the organ becomes dilated. In these facts we have a basis for a two-fold clinical division, according as the stomach becomes empty once in 24 hours, or is never empty. You may call the former, atony with stagnation ; and the latter, atony with retention. The distinction is important, because not only are the signs and symptoms different, but the treatment is different in each case, as I will show you.

Before discussing the matter further, allow me to read to you brief notes of the following cases :—

Miss N., aged 19, quite healthy up to about 18 months ago. About that time began to work very hard in training for a governess ; studying for long hours in a cramped position over a table ; wearing tight and rigid corsets ; hurrying over her meals ; sitting up late ; sleeping badly ; and anxious about her examinations. For some time past has complained of weight and uneasiness after meals, which gradually passes off as digestion proceeds, and troublesome flatulent eructations. The discomfort is only slight after breakfast ; worse after luncheon ; and still worse after dinner. The character of the food seems to influence the discomfort less than its quantity. It is no better, but rather worse after liquid than after solid food ; and any food beyond quite a small quantity is sure to cause uneasiness. There is no vomiting. The bowels are costive. She is losing flesh and strength, probably because she is working hard and taking insufficient nourishment.

The abdomen is soft and flacid, without tenderness. Splashing sounds are readily obtainable, though five hours have elapsed since the last meal—a light breakfast. There are no

indications of dilatation of the stomach. The tongue is pale and flabby, and indented by the teeth. The urine is neutral; depositing amorphous phosphates on boiling; no albumen; no sugar.

Under careful regulation of the diet, reduction of the amount of fluid drinks, rest after meals, and change in the habit of life and work, the patient greatly and quickly improved.

S. H., a man of 26 years of age, was admitted into this hospital on October 21st, 1894. Has been a nail-maker for last 11 years, with long hours of work. A hearty and quick eater; besides which, he was accustomed to drink large quantities of water while at work. A total abstainer from alcohol. Had influenza two years ago, and dates present trouble from that; because ever since then his digestion has been very uncomfortable. He chiefly complains of weakness, constant tiredness, and disinclination for work, which seem to be increasing. Never comfortable in his stomach; has great distension after meals, especially towards the end of digestion, with frequent belching of sour irritating matter. Vomits every three or four days, which is sometimes preceded by waterbrash. Vomit abundant, frothy, and very sour. Appetite bad; losing flesh; wakes in the morning with a headache and nasty taste in the mouth. Bowels irregular,

On admission: A tall, thin man, tongue coated, large, and indented by teeth; abdomen large and flabby; no tumour; stomach dilated, and reaches below umbilicus. Splashing sounds obtained over stomach at any time—not only during the intervals between meals, but also in the early morning. Ten grains of salol were given, and the urine was tested with ferric chloride every half-hour; but no salicyluric reaction was observed for 3½ hours, at which time the patient vomited. Four grains of potassium iodide were administered in a gelatine capsule, and no trace of iodide was found in the saliva until twenty-two minutes later.

Under treatment with dryish food, occasional lavage, and artificial abdominal support, he rapidly improved, the vomiting

never recurred ; and in three weeks he was discharged, having gained 21b. in weight.

These two cases, representing, as they do, two different degrees of gastric atony, afford an opportunity for considering some practical points in connection with the subject.

The causes of atony fall into two principal groups—those acting directly upon the stomach, such as large eating and drinking, hurried meals, large drinks between meals, and so on ; and those acting indirectly by lowering of the general health and nutrition, such as bad hygiene, nervous exhaustion and anxiety, and exhaustion brought about by severe acute disease, especially typhoid fever and influenza. The former group, where the etiological factors are comparatively easy to get at, and to remove, are obviously more amenable to treatment than those in which there is marked deterioration of the general health. In the same connection it is important to keep in mind the share taken by the general physical conditions under which the stomach is called upon to do its work, and particularly with regard to the tone and strength of the abdominal walls. As the result of repeated pregnancies, deficient exercise, and constriction of the waist by belts or corsets, the abdominal walls are apt to lose their tone, and fail to give to the stomach an adequate mechanical support. Tight corsets are one of the commonest contributory causes of atonic dyspepsia in women, and tend to bring about a downward displacement of the stomach, which greatly increases the difficulty of the stomach in getting rid of its contents. The operation of these causes is well illustrated by the two cases I have reported to you. In the first we have to do with sedentary occupation, hard work, anxiety, cramped position, and constriction from corsets ; while in the latter, the chief causes are to be found in post-influenzal exhaustion and debility, coupled with the habit of drinking large draughts of water between meals.

With regard to the recognition of motor insufficiency, Chomel's sign—namely, splashing of the gastric contents on percussion—is by far the most generally useful. The factors

which are necessary for its production are the simultaneous presence in a flabby stomach of watery fluid and air. In a normal empty stomach, a large tumblerful of water is discharged into the duodenum in the course of 1 to $1\frac{1}{4}$ hours. It is now known that water is not directly absorbed from the stomach, or only to a very small extent. If, then, splashing sounds can be elicited later than this, we may safely conclude that there is motor insufficiency, in proportion to the extent of the delay. Under normal circumstances splashing sounds cannot be elicited at all, or only for a short time, after taking a meal. In motor insufficiency they can be elicited during the whole of the digestive period. In simple atony with stagnation no splashing sounds can be elicited in the morning before breakfast, whereas in atony with retention the contrary obtains. You will remember that in the second case of the two I have reported, splashing was readily obtained in the fasting stomach, thus establishing the fact of retention beyond all doubt. You will thus see that splashing is not *per se* of any morbid significance, but it becomes so in proportion to its persistence. Some little care is required in making the observation. It is necessary, for instance, that the abdominal wall should be thoroughly relaxed, and the shock transmitted by the fingers should be suddenly produced, and strictly vertical in direction.

The salol test of Ewald, referred to in the second case, has also a certain value, but it is inconvenient, and not altogether trustworthy. Under normal circumstances, the presence of salicyluric acid in the urine should be observed at the latest $1\frac{1}{2}$ hours after administration. In the case related it was not observed for $3\frac{1}{2}$ hours.

On the other hand, by means of the stomach-tube, it is possible to obtain unequivocal information as to whether the onward passage of the gastric contents is delayed or not. After an ordinary Ewald's test-breakfast of bread and tea, the quantity of fluid which can be withdrawn an hour later rarely exceeds five ounces. If it is more than this, there is motor insufficiency of the stomach, in proportion to the excess. Or again, if in

seven hours after an ordinary full mixed meal the stomach is still unemptied, motor insufficiency is unquestionably proved.

Having by one or all of these methods established the fact that the stomach does not get rid of its contents as soon as it ought, it is necessary to ascertain whether this result depends upon simple motor weakness, or upon some mechanical impediment to escape. In other words it is necessary to distinguish gastric atony (as a simple functional disorder) from pyloric obstruction. This distinction, though useful from a clinical standpoint, is not quite so rigid as you might suppose. Thus, long-standing cases of atony are very apt to be associated with more or less gastroptosis, or downward displacement of the stomach—a condition which introduces factors of an obstructive order over and above mere motor weakness. Again, in the latter stages of all cases of pyloric obstruction, there is always associated motor weakness of the stomach.

Gastroptosis is readily recognised, when well marked, by the altered contour of the abdomen, by observation of the area over which splashing sounds may be produced, by palpation, and (if needed) by artificial inflation of the stomach through a tube.

The exclusion of pyloric obstruction is often very difficult in the absence of palpable pyloric induration or an actual tumour. Although I cannot now go fully into the question of diagnosis, I may draw your attention to the following points. Atony only exceptionally gives rise to very marked retention of contents, and dilatation of stomach. In such cases, the presumption is in favour of some mechanical impediment at the pylorus. The evolution of atony is slow and mild, whereas the evolution of obstructive insufficiency is more often rapid, painful, and stormy. Again, if the symptoms and signs of insufficiency come on late in life, without previous history of dyspeptic tendencies, especially if associated with marked emaciation, they are more likely to be due to malignant obstruction. This suspicion is further strengthened by the absence of free HCl, and the presence of considerable lactic acid in the vomit. Lastly, the presence of

undigested fragments of food taken on the previous day in fluid removed from the fasting stomach by the tube at early morning, points very strongly to some mechanical obstruction of the pylorus.

Having arrived at a diagnosis of atony from a course of enquiry such as I have indicated, we come to the important question of treatment; and, in this connection I shall first describe the management of the more common form which is associated only with stagnation of food, and then pass on to that of the less common form with retention.

Atony with Stagnation.—The chief indications in the way of diet are—to avoid over-distension; to give time and opportunity to the stomach to get rid of one meal before another becomes due; and to meet the requirements of nutrition. It is not always easy to reconcile these indications. For instance, you may avoid over-distension by giving very little food, but with the risk of starving your patient; or, in your endeavour to nourish your patient sufficiently, there is not time for the stomach to empty itself before the next meal is taken. Speaking generally, we have to choose between two plans—(a) giving small meals at shorter intervals than usual; and (b) giving a carefully selected, but fairly substantial meal, at longer intervals than usual. The latter is the better plan when the appetite is fairly good—say, three meals a day, at 8 a.m., 1.30 p.m., and 7 p.m. If the appetite is bad, it is often wiser to give food every three hours. The habits of life have also to be considered. Thus, if a patient can afford the time to rest for a considerable time after each meal, he may be able to take much more food at a time than under opposite conditions. One of the most disturbing meals of the day, coming, as it usually does, near the height of the digestion of dinner, is “afternoon tea.” In mild cases, the mere stoppage of this meal suffices often to give substantial relief.

With regard to the character of the food, the two most important rules are—(1) reduction of fluid taken *with* food to a minimum; and (2) the selection of compact nutritious

food, such as meat, lightly boiled egg, and easily digestible cereals, such as flaked wheat or oatmeal. Milk taken alone is eminently unsuitable. While proper nutrition demands that the diet should be mixed, it may be pointed out that animal food is more suitable than vegetable food. Such vegetables as are taken should be pulped. Easily fermentable food should be avoided, such as sugar in excess, and fruit preserves. Pastry, either boiled or baked, and all puddings containing suet should also be forbidden. Soups should only be taken sparingly, or not at all. At the same time, a small quantity of vegetable purée is often admissible. Light wine, when the appetite is poor, may be desirable, or a little good spirit, well diluted. Fluid drinks should be mainly supplied when the stomach is empty or when digestion has well advanced. Thus, a glass of water may be taken early morning and at bedtime, while about half a pint of hot weak tea (without anything to eat) may be sipped at 5 p.m.

Rest for at least twenty or thirty minutes should always be taken after each meal. Hurrying over breakfast, and rushing to meet trams and trains are responsible for many cases of atonic dyspepsia.

No tight clothing, such as belts or corsets, should be permitted; and great benefit is derived from exercises designed to strengthen the abdominal walls, weakness of which is very common in women, particularly in those who have borne children. A light close-fitting abdominal support is often of the greatest service. Massage of the abdominal muscles is useful in certain cases; and another valuable adjuvant is the daily employment of the alternating or Scotch douche to the abdomen—half a minute with water at 95°, then for half a minute at 65° or 70°, and so on alternately for four or five minutes; after which the patient should lie quietly for twenty minutes, wrapped in a long Turkish towel.

As to medicine, strychnia is the most valuable drug, either combined with bicarbonate of soda and arsenic, and given just before meals; or combined with hydrochloric acid and pepsine

after meals. No strong aperients should be used for constipation, nor do I find that the habitual employment of saline aperients is desirable. Personally I prefer to clear out the lower bowel by an enema in the first instance, and then keep up the action with a daily minimal dose of some such aperient as cascara or aloes in combination with belladonna and nuxvomica, taken after dinner.

Atony with retention.—Here the primary indication is to prevent, or at least control, fermentation. The difficulty of adjusting the capacity of the stomach to deal with food, with the requirements of nutrition, is greater than in the simple form. In decided cases it is better to send the patient to bed for a week or so. You gain three advantages:—Less food is required, the position of the patient is more favourable to the escape of food from the stomach; and it is convenient for lavage, or rectal feeding, if required.

As to diet, we have here to rely mainly upon nitrogenous food, *e.g.*, boiled fish, shredded, scraped, or pounded meat, meat jellies, beef-meal, plasmon, protene, and such like foods. Milk rarely agrees. A moderate allowance of well cooked cereals may be permitted; but no fruits, jams, or puddings. Boiled rice is a useful substitute for potato. Bread-stuffs should only be taken in the form of crisp toast, rusks, biscuits, or zwieback. Four meals a day answer best—say, at 8, 12, 4, and 8. As to drinks, half a tumbler of hot water may be given an hour before each meal. There is no objection to a small quantity of good spirit with some of the meals—say, 3ij in a wine-glassful of water. No tea or coffee.

In all but the mildest forms, washing out of the stomach is essential, for really good results. The best time is in the morning as a rule; but if sleep is restless and disturbed from stomach disorder, it may be advisable to carry out the washing the last thing at night. Warm water, containing a teaspoonful of boric acid and about 15 or 20 grains of salicylic acid to the pint, is the best lavement. Medicinally, an alkali is indicated in combination with some anti-fermentative, such as sulphocarbolate

of soda, or resorcin. It is often beneficial to give twenty grains of carbonate of bismuth immediately after washing out the stomach.

When fermentation ceases, the plan of treatment advised for simple insufficiency of the first degree should be followed.

It must be understood that inasmuch as atony of the stomach is often combined with other disorders, especially with secretory disturbances, or some form of gastritis, the treatment which I have described to you will have to be modified in certain details, the consideration of which may occupy us on some future occasion.

THE MIDDLEMORE LECTURE.

SOME FUNCTIONAL DISORDERS OF VISION.

BY HENRY EALES, M.R.C.S.,

SENIOR SURGEON TO THE BIRMINGHAM AND MIDLAND EYE HOSPITAL.

Gentlemen,

The choice of a subject on which to address you has caused me some misgivings. On the one hand it seemed desirable to choose some subject which could be demonstrated the more clearly to you by the aid of cases presenting signs obvious to all; but after some reflection I thought it might be well to discuss with you some functional disorders hardly capable of much elucidation by this means: (1) because such disorders are of common occurrence in the practice of most, (2) because they are interesting in themselves, and a right understanding of them of importance to both doctor and patient, (3) because they are due to the general type of constitution of the patient, and the state of his general health, and therefore very proper for your consideration.

SCINTILLATING SCOTOMA.

I propose, in the first place, to deal with that disorder called scintillating scotoma, because it commences usually as a bright sparkling spot in the field of vision; sometimes called amaurosis partialis fugax, from its partial and evanescent effect on vision, and also known as teichopsia (from *τείχος* a wall, *ὄψις* vision), on account of the zigzag lines often seen around the scintillating spots like the walls of the fortifications round Paris; and also described under the title of ophthalmic migraine, on account of its association with migraine.

This affection is very common, indeed, much more so than generally supposed —(1) because many patients have become so accustomed to these recurrent attacks that rapidly pass off leaving no ill effects, that they make no complaint of them ; (2) because if they do complain, it is rather on account of the headache which follows this peculiar temporary visual disorder, which itself is not described to the medical attendant, while only the worst cases probably come to the notice of the ophthalmic surgeon ; yet, even in our experience, this condition is by no means a rare one ; such patients, on account of the pronounced eye symptoms, seeking our advice in hopes that their trouble is really due to some ocular disorder, for which we may be able to give them relief,—a vain hope usually destined to disappointment.

Such patients describe their trouble much as follow : That they are subject to attacks which commence by a sparkling spot or scintillation, which suddenly appears near the centre, or fixation point, of the field of vision of each eye, which is still present if the eyes are closed, that this rapidly enlarges till he can hardly see at all, and that the scintillating central area is encircled by a bright zigzag line (like the fortifications of Paris), and that he is then only able to see very imperfectly large objects, and that this loss of vision is often accompanied by a feeling of giddiness, and that for a variable time, from a few minutes to half an hour this condition persists, when it then rapidly passes off, the sight commencing to return at the point first affected, but that on the recovery of his vision, headache sets in, which gets worse, and goes on till he is prostrated, indeed, the visual attack is only the early symptom of an attack of migraine, which commonly but not invariably follows.

I do not think I have ever known a patient to state that the visual phenomena have lasted more than three-quarters of an hour in the most extreme cases, while ten minutes or a quarter of an hour is the time usually given. In slight attacks no headache supervenes. I do not recall, on the other hand, ever

hearing a patient say that the headache preceded the visual attacks.

HOMONYMOUS HEMIANOPSIA.

It is interesting and important to note further, that in a large percentage of these cases the scintillating scotoma passes rapidly into a condition of homonymous hemianopsia; that is to say, the corresponding half of the field of vision in each eye becomes a blank. For instance, suppose it is the right half of the field of vision which becomes blank, and the attack comes on while he is reading, then the page seems to be divided into two halves by a line running through the word he is looking at, all of the print to the right hand side of this line being a blank, and the appearance remains the same whether looking with both eyes simultaneously, or if he tries looking with either eye separately while closing the companion eye; or, suppose he is talking to a friend at the time of the onset of the attack, then he notices that while he sees the left eye and left side of his friend's face, the other side is quite blank.

Some patients are not observant, and have to be educated to observe what really does take place in these attacks before their nature can be elucidated; but many find out for themselves what occurs, because, having an impression that the blindness on one side, say the right, means blindness of the right eye, they try shutting first one eye, then the other, in order to confirm their opinion, and so discover, to their amazement, that they are half blind in each eye for right-hand side of their field vision.

These attacks of hemianopsia last for ten minutes or a quarter of an hour usually, and then rapidly pass off, like the scotoma, as previously described, and rarely last three-quarters of an hour. I have once or twice had patients assert that the attack lasted quite an hour, but I fancy they were very likely not accurate observers of time. On the hemianopsia passing away headache usually supervenes, passing on to an attack of migraine. It is very important to remember that these attacks

rarely last more than twenty minutes or half an hour, and never more than an hour.

I would here beg to draw your attention to the fact that in the early stage of a fainting fit, before loss of consciousness takes place, or in slight attacks not passing on to loss of consciousness, it is not uncommon for patients to complain of the occurrence of this condition of homonymous hemianopsia ; or of loss of vision, which, on enquiry, is found to be evidently one of homonymous hemianopsia, because this helps us to understand the nature of the cause of this interesting phenomenon—but in these cases it is not usually followed by headache.

What then is the cause of these attacks, and where is it the disturbance takes place? It is generally agreed that we must look to the central nervous system as the seat of disturbance. A study of the anatomy and physiology of the visual apparatus, by the aid of the diagram I have here, will enable us to see that a disturbance of function located in the central nervous system will cause a visual phenomenon at identical spots in the area of the field of vision (apparently) simultaneously in each eye. The nature of this disturbance is probably localised anæmia of visual centres, from vascular spasm, leading to loss of function.

From a study of the arrangement of the whole visual apparatus from the eyes to the visual centres, it will be obvious that a homonymous hemianopsia can only be produced by some cause affecting the central nervous apparatus *posterior* to the chiasma, of which it is absolutely pathognomonic. It is obvious that a similar cause would account for the simultaneous occurrence of identical scintillations near the fixing point in each eye, and as these phenomena are so often associated it seems reasonable to assume that both are due to the same central cause.

The evanescent and recurrent nature of these attacks point to the circulatory disturbance as the cause, while the loss of function, and the occurrence of these attacks during fainting, point to anæmia of the nerve centres as the actual condition that sets it up. The anæmia being due presumably to vaso-motor spasm, *per se*, in the case of migraine ; while in fainting

the spasm is no doubt due to the invariable tendency of arteries to contract if the intra-vascular tension is lowered. The headache, too, that accompanies these attacks points to disturbance in the cerebral vascular system. Such disturbance in the visual cortical centre of the occipital lobe, setting up an irritation in the visual elements of that centre which, in accordance with the laws of physiology, is referred by the patient to corresponding points in the visual fields.

If this affection occurs only at long intervals, probably such patients finding the attacks evanescent, and leaving no permanent trouble will not seek advice; while if the attacks are very frequent the long history, of several previous attacks, leaving no intermediate trouble, enables the doctor to diagnose the functional character of the case. This form of migraine, like other forms of the affection, often commences early in life, and usually get less frequent as age increases, being rare over 50 years of age.

The following experience is worth recording to you as emphasizing the points it is important to bear in mind, in distinguishing between a functional temporary hemianopsia, and one due to a structural lesion.

A former patient of mine, a man aged 47, with a florid complexion and stout of habit, consulted me in 1893, giving the following history:—

The previous evening he took the chair at a meeting convened to bestow a testimonial on a respected official, and while speaking was seized with a feeling of giddiness and confusion, but managed nevertheless to complete his speech and present the testimonial; after which, feeling still unwell and his vision being affected, and a sense of giddiness persisting, he took an early opportunity to go home, when headache and vomiting having supervened, he thought well to send for his ordinary medical attendant, who expressed the opinion that he was upset by the excitement of the meeting and had got his stomach disordered, and gave him an aperient and expressed the opinion that he would be all right in the morning. However, though he was better the

next day he still complained to the doctor that there was something wrong and peculiar about his vision. The doctor then advised him to consult me ; which he did that day. On examining him I found no structural changes in his eyes to account for any visual defect, and ascertained that he had complete homonymous hemianopsia. The L. half of F.V. in each eye being blind even to perception of light.

I advised him to go home quietly, taking a cab to avoid exertion, and to go to bed, and get his doctor to look after him, giving him a note to give to his doctor explaining that he was suffering from an attack of homonymous hemianopsia, which clearly indicated a cerebral lesion, posterior to his chiasma ; that, considering the history of his case, the sudden occurrence *without previous symptoms*, and its coming on during a state of mental excitement, I inclined to the opinion that a cerebral hæmorrhage was the cause, and that as there were no other symptoms except the visual symptoms, I thought the lesion was probably situated in the visual centre in the occipital lobe ; but that, as there was no loss of consciousness at the time of occurrence or since, the hæmorrhage was probably a small one, that it was obviously most important he should be kept quiet in bed for fear of further trouble arising, and his case treated with all the gravity due to a case of cerebral hæmorrhage, and suggested that it would be well to examine his urine for the possible presence of albumin or sugar, which might explain the occurrence of hæmorrhage in a man so young ; and ascertain if there was any cardiac hypertrophy to suggest the presence of Bright's disease, or any cardiac lesion which might point rather to cerebral embolism as a possible cause of his trouble, that probably a careful overhauling of his patient would enable him to arrive at a conclusion as to whether cerebral hæmorrhage, embolism, or arterial thrombosis, was the cause of the trouble ; though the absence of any previous symptoms I thought militated against the view of its being due to thrombosis.

The doctor, and patient's friends, on learning that his trouble

was not due to any ocular disease, but was, in my opinion, indicative of a cerebral lesion, very wisely and properly called in a physician, who, after seeing him, expressed his opinion that his attack was one of "functional hemianopsia of migraine," and accounted for a trace of sugar which was found in the urine as probably temporary and due to the cerebral excitement caused by the meeting. This opinion was communicated to me by the family doctor, who hoped I had taken altogether too serious a view of the case, and who could not think it likely that a hæmorrhage could have taken place without causing loss of consciousness, and without any other subsequent symptom than the defect in vision. To this I replied, that having previously seen cases where a cerebral hæmorrhage had certainly taken place without causing loss of consciousness, and also cases of undoubted cerebral hæmorrhage where no defect except hemianopsia was subsequently to be discovered, I still adhered to my opinion, and that while I had great respect for the physician's knowledge of general medicine, it was clear to me that his conception of functional hemianopsia of migraine was entirely erroneous, such attacks rarely lasting for longer than half an hour at the outside, and referred him to Gower's work as an authority on this point on which he might rely, and entreated him to keep his patient quiet if he would avoid a catastrophe.

No further trouble arising, the patient in due course resumed his occupation, though somewhat embarrassed by the persisting hemianopsia.

In 1898, some five years later, this patient again consulted me; this time for severe iritis in one eye, suggestive of the diabetic type, and I found the hemianopsia still present in each eye, though no longer complete, and on examining his urine it had a specific gravity of 1042, sugar was present in large quantities, but no albumin.

The patient then informed me that he had for some twelve months been under the treatment of a medical man in the country for diabetes, discovered by this gentleman to exist, he

having left Birmingham since he consulted me for his previous trouble.

If my friend, the physician, had only clearly appreciated the temporary character of functional hemianopsia, and had paid more attention to presence of sugar in the urine in this case, he would probably not have disagreed with my view of the hemianopsia being due to hæmorrhage, and the diabetes would have been discovered at a much earlier stage, while had not the family doctor been sufficiently impressed by my views, and kept his patient quiet, who knows but what a serious attack of cerebral hæmorrhage might not have occurred.

The following then are the salient points to bear in mind about Functional hemianopsia:—That the attacks are so evanescent, it must be *very rare* for the hemianopsia to be found present by the doctor when the patient consults him; that the attacks are very recurrent, often extending over years, but that between the attacks vision is good.

A first attack in a patient over forty should be investigated with care, and received with suspicion. In any case, certainly in a doubtful one, the doctor should assure himself of the absence of any eye disease; also, if in any doubt he will be wise to assure himself of the absence of kidney disease, or cerebral disease which might cause attacks of dimness which might be mistaken for this affection.

TREATMENT.

This resolves itself into the general treatment of migraine for the most part, often a very unsatisfactory matter, and hardly one for me to deal with. I may, however, say that it is important to ascertain the exciting causes of attack, and if possible, to avoid them.

A timely attention to the premonitory symptoms of extreme hunger, or constipation, by giving a purgative, will often ward off, or mitigate an attack; and for this purpose, saline aperients, specially one containing a large percentage of sulphate of soda, seems the best. For this purpose I am fond of prescribing Carls-

bad salt, with some sulphate of soda added. Where over-exertion, or excitement, or fatigue seem to predispose to attack, this should be avoided ; where sight-seeing, such as going to picture galleries causes attacks, this should be altogether avoided, or only indulged in for a very short period at a time, it being better to pay two short visits than one long one. If there is some intolerance of light, as is often the case in these patients, smoke glass should be worn whenever the least necessity for them arises. In all cases in which the use of the eyes seems to bring on an attack, as in cases occurring after sight-seeing, it is well to very carefully examine the eyes for any possible defect ; and if any astigmatism or other optical defect, or any want of muscular balance is present, endeavours should be made to correct these by means of glasses ; as in many cases, excited by ocular strain, a great reduction in the frequency of attacks often occurs if some optical defect is corrected by means of glasses, or some want of muscular balance is relieved by suitable prismatic glasses. It is sometimes found by patients who suffer after railway journeys, that they suffer less if they read while travelling. This seems paradoxical, but anyone who will watch his opposite neighbour while he is looking out of the window of a travelling railway carriage, and note the rapid oscillations of his eyes, as the objects looked at pass by, will easily understand that this may be more disturbing to his visual apparatus than following the words on a page ; probably, it is better for such patients to travel with closed eyes, sleeping if possible. Every care should be taken to maintain to the best the general health and vigour of such patients.

TEMPORARY MONOCULAR BLINDNESS.

I now wish to say a few words about another failure of vision which is often confused with that just described, namely, temporary blindness in one eye, and often some care and cross examining of the patient is required before one can satisfy oneself as to whether this condition, or that which we have just considered, is what the patient suffered from ; but many patients

will tell you most distinctly that it was a blindness of one eye, because they shut the companion eye and found they could not see with the eye affected, while vision with the other eye was unimpaired.

These attacks of monocular blindness usually last only a few moments, or from ten minutes to half an hour at most, though very occasionally the patient will state that they lasted an hour or more, when the sight rapidly returns. I have recently seen a patient who declared her eye was blind for over two hours. On examination the eye will be found quite normal in all respects, vision being normal, and if the extent of the F.V. is taken with the perimeter it will also be found to be normal. Some patients will aver that these failures of vision are of almost daily occurrence, while some will even state that they have several in one day occasionally. Such patients are usually young women, in whom such failures of vision are exceedingly common, specially in those that are anæmic. Occasionally such attacks are accompanied by a feeling of faintness or giddiness, but often by no other sign than the loss of vision, and usually this is not followed by headache or any other symptom.

The fact that many patients suffer in this way for several years, during which many score or more of attacks have occurred without any permanent damage to vision, has seemed to me to justify my placing them under the category of functional disorders, though some facts to be presently mentioned make it always reasonable to suspect that there may be a physical basis of disease in such cases.

This loss of vision appears to be due to a failure of retinal circulation from vaso-motor spasm of the retinal artery, and such contraction has been actually observed by Benson* while examining a patient during an attack to which he had for some time been subject. In some the failure of vision would seem to be preceded by faintness, which, by lowering the general vascular tension, facilitates the failure of retinal circulation from vaso-motor contraction.

* Trans. International Ophthalmic Congress.

Occasionally, such patients seek advice because such a failure, unlike many previous attacks, has not been followed by recovery. On examining the eye ophthalmoscopically in such a case, we find all the signs of a block in the artery, with cessation of retinal circulation and cedema of the retina. Such sudden blocking of the artery, up to recent years, was almost invariably attributed to embolism of the central artery of the retina, but there is now a consensus of opinion that it is to thrombosis, rather than embolism, that this blocking of the artery is usually due, and in any case of such blocking, where there is a history of previous attacks of temporary loss of vision in one eye, this is taken as strong evidence in favour of thrombosis rather than embolism.

In these cases it would seem that the lumen of the artery is lessened by mesarteritis or endarteritis in the artery, so that in any temporary failure in the force of the arterial circulation, the circulation in the retinal artery is, in consequence of the diminished lumen of the artery, lowered below the point required to maintain the visual function, and blindness ensues; while the local arterial disease predisposes to local thrombosis which occurs in some attacks where the failure of circulation has been rather more severe or prolonged than usual.

It would seem as though the sharp bend taken by the artery as it winds over the disc to spread out in the retina predisposes it to obstruction at this point, while the intraocular tension assists to offer some obstacle to the entrance here of blood into the eye at each cardiac impulse. The fact that when the vessel does get blocked it is usually found at the point where it enters the eye suggests that the anatomical and physiological condition at this point predispose it to arteritis and thrombosis here.

Prognosis.—This is favourable in the young, where arterial spasm alone is the cause usually; but coming on in middle, and past middle life, it is more grave, as suggesting endarteritis, and a tendency to thrombosis in the artery, with permanent loss of vision in consequence.

Treatment.—In the young a course of iron, with nitro-glycerine and strychnine added, seems indicated ; but in middle life, if there is a history of syphilis, potass iodide, and perhaps mercury, should be given ; while if there is a gouty history the usual attention to diet, etc., and an occasional saline aperient, with free drinking of hot water, may be useful, and in these cases I think a course of potass iodide and soda salicylat is useful.

NEURASTHENIC ASTHENOPIA.

In this affection the patient complains that the eyes soon tire, that in reading the letters run into one another, and the effort causes aching in the eyes, with lachrymation, and there is generally intolerance of light, though there may be no optical defect to account for these symptoms, or if there is the symptoms continue even after the most perfect correction of any optical error by glasses ; such patients often seeking advice of nearly all the oculists in their neighbourhood, in hopes of being able to get glasses to relieve their eye troubles, and the headache to which they give rise. There are, too, complaints of pain in the eyes, which may be tender to touch, and pain at the back of the eyes.

If the vision is tested with types it will be found normal at first, but can only be maintained for a few moments, and there will generally be symptoms of general neurasthenia.

If the F.V. is tested in such a case we find it contracted concentrically and not unequally, as in atrophy of the optic nerves, or structural disease of the eye—and if we prolong the taking of the F.V. we find it gets smaller as time goes on or what is known as a fatigue F.V. is obtained.

One way to do this, and which I prefer, though there are other methods, is to very tediously take the F.V. on a perimeter till we come round to the point at which we started, when, if we still go round the circle, we shall find that the F.V. is now smaller than when first taken at same point, and so we get a spiral chart, or fatigue chart, the first circle overlapping the second.

This fatigue F.V. is most characteristic of this condition. If we take a chart for red and green, we shall find that though they are a little smaller than normal it is not much, and they follow the normal order—green being smaller than red. This concentric contraction of the F.V., or fatigue F.V. are pathognomonic of this condition.

Treatment.—The most important thing is to treat the general condition of the patient, promoting vigour and nutrition in every way, and avoiding fatigue. Dark glasses often give relief to the photophobia, and if any optical defect is present it must be corrected by proper glasses, which often give more relief if tinted slightly blue, and if there is any want of convergent power a prism should be added, while cocaine drops often give relief to the ocular pains and discomfort.

Prognosis.—Good as regards ultimate effects on vision, but bad as regards the duration of the trouble, some such patients so suffering for years.

TRAUMATIC AMBLYOPIA.

Now what is sometimes described as traumatic, or hysterotraumatic amblyopia, is apparently identical with the foregoing, only that there has been a history of injury to start these nervous phenomena, which may be very much more pronounced, and even equal those seen in hysteria, so that neurasthenic asthenopia, traumatic amblyopia, and hysterical amblyopia may be considered as degrees of the same affection. These cases of traumatic amblyopia are those that so often add to lawyers' fees, and detract from the reputation of medical men, but I do not think it necessary or useful to pursue them further here.

HYSTERICAL AMBLYOPIA.

This too, may be considered as an extra degree of neurasthenic affection, as the resemblance in kind is so great. Here, the inability to see may go altogether beyond an inability to read and amount to considerable amblyopia, usually one eye being much more blind than the other, though it is more than doubtful

if it is ever quite blind as is often asserted by the patient, there being *it may be only a very small area in the centre of the F.V.* still retaining its function.

If the F.V. is taken in these cases, it may be found contracted almost to within 10 or 5 degrees of the fixing point, but always concentrically as before, and not unequally as in diseases of a structural kind affecting the nerves ; and if the F.V. is taken for colours, there is still found to be the normal relation of colours to one another, or if there is a departure, it will probably be found that the F.V. for red is as large or larger than that for blue, or even white, and not proportionally much reduced as in atrophy of the optic nerve. Such patients, apparently, having rather a predilection for red, and this kind of chart is pathognomonic of this affection and will serve to identify it in most cases of doubt.

In these cases spasm of the orbicular muscle often occurs, such patients being brought in blind, with the eyes closed ; or there is often spasm of accommodation, myopia being found by the shadow test in the dark room, and they will often have vision much improved by concave glasses, though it is not maintained. Spasm of convergence also occurs. The spasm of convergence causing diplopia, while spasm of accommodation will cause monocular diplopia, about which much needless mystery has been made, also the curious symptoms micropsia and macropsia, these symptoms all being sufficiently explained by the optical conditions. In most cases there is a marked difference in the size of the two F.V.'s, and in some this is most extremely contracted in one eye, and but little in the other. In cases where one eye is said to be blind the placing of a plane glass before the eye, or better still a concave one of 3 or 4 d., where spasmodic myopia has been found to be present, by the shadow test, will often enable the patient to see. This need not be construed as evidence of malingering, but rather that the effect of help, by correcting the myopia, or suggestion of help, has assisted the patient to withhold the inhibition of vision, which is psychical in origin.

Hemianesthesia, or other symptom of hysteria, will probably be present. Hemianesthesia being on the same side as the supposed blind eye or one most affected, it is noteworthy that these patients never have an hemianopic F.V. The absence of any visible disease of the eye makes the diagnosis complete.

This visual defect is regarded by all who have paid attention to this disorder as due to a central nervous disturbance, all the facts according with the view of a central origin, and in order to explain the fact that it never conforms to the type of hemianopsia so generally found in structural disease of the cerebrum, it is assumed that there is a second decussation of the fibres of the optic tract, probably about the neighbourhood of the corpora quadrigemina, by which the two half F.V. are reunited, these ending in a higher psychical visual centre located in the neighbourhood of the angular gyrus, which thus becomes a visual centre for the eye on the opposite side, and also to some extent for the same side also ; and that the suppression of the function of this centre leads to the loss of vision in the opposite eye, together with the contraction of the F.V. of the eye on the same side. This view is repudiated by many, but is supported by Gowers by some cases of crossed amblyopia in structural cerebral disease, and by experiments on monkeys made by Ferrier, and those who would wish to more fully study this theory can not do better than read Dr. Gowers' Bowman lecture at the Ophthalmic Society.*

Treatment is comprised in the treatment of hysteria generally, but I know nothing better than a smart application of the continuous current, one pole at the nape of the neck, and the other over the closed eyes and around the orbits, to induce the acute cases, with orbicular spasm, to open their eyes and see ; but, in the absence of this, moistening the skin over the eyebrows, and rubbing a solid stick of nitrate of silver on, answers well, or a blister or some other form of counter-irritation may suffice.

* Trans. Ophthalmological Soc., Vol. XV.

It is remarkable that painful stimulation of the skin in these cases is at once followed by enlargement of the F.V.

It only remains for me now to thank you for your kind and patient attention to my lecture, and in doing so to say that I am aware how very sketchy and fragmentary it has been ; but time is inexorable, otherwise there is scarcely any limit to the extent to which such a theme might be extended and elaborated, and it has, I assure you, been even more difficult to know what not to say, than what to say, so complex are some of the matters presented for consideration by these curious and intricate functional disorders, but I trust I have said sufficient to explain their salient phenomena to you.

LEUKÆMIA.*

BY T. LAW WEBB, M.B., B.CH. BIRM.

Gentlemen,

I have thought that a short paper on the pathology and clinical history of leukæmia might not be unacceptable to this Section, especially since improved methods of blood examination have enabled the diagnosis of this not very rare disease to be made with ease and certainty. Moreover, several cases have recently been under treatment in the Infirmary (one of which, Dr. Gardner's, you have had an opportunity of examining). I am also able to show you some very striking preparations of the blood in four of these, and also of blood taken from a patient of Dr. Lytle, and from one of my own cases.

Leukæmia (or leucocythæmia) is a disease in which the white or colourless cells of the blood are greatly in excess. This definition, you will observe, takes it for granted that a microscopical examination of the blood has been made, and implies that such examination is the only means we have at present for making an accurate diagnosis in cases of this disease. It is true that leukæmia is usually accompanied by enormous enlargement of the spleen, by disease of the bone marrow, sometimes by great swelling of the lymph-glands, or increase in the size of the liver. But these organs are subject to enlargement from so many causes (some of which will readily occur to your minds), that it is unsafe to conclude that the case is one of leukæmia because such a condition is present, even when accompanied by other symptoms which I shall mention later on. Besides, there is no need to insist upon a careful study of the clinical characteristics of leukæmia for the purpose of enabling the practitioner to make

* A paper read before the Clinical and Pathological Section of the Shropshire and Mid-Wales Branch of the British Medical Association, on Dec. 10th, 1901.

the diagnosis more readily. A single microscopical examination of a dried blood-film properly stained, settles the question absolutely, and at once. Indeed the study of such a blood-film, without having seen the patient at all, decides whether leukæmia is present or not. Such precision has been possible only of late years, in fact since Ehrlich and his pupils so greatly improved the technique of blood examinations.

Previously to this, when staining was unknown, any moderate increase in the number of white blood-cells was called "leucocytosis," whilst a more marked increase, such as raised the proportion of white cells to red cells from one in 500 to one in 50, was deemed proof of the existence of the graver condition called "leucocythæmia," or "leukæmia."

Now a moderate increase in certain of the white cells of the blood, or in other words a "leucocytosis," is often a physiological process, and occurs normally during digestion, in pregnancy, or after a cold bath. Pathologically, it is also an almost invariable accompaniment of nearly all inflammatory processes, such as abscess, fevers, pneumonia, etc. Formerly, therefore, when a considerable increase of leucocytes was found, for lack of a correct technique it was often impossible to decide whether this was to be considered evidence of a leucocytosis, or of a commencing leukæmia. It was also impossible to say whether the leukæmia, when present, was of lymphatic origin, or due chiefly to an influx of cells from the bone marrow (that is, whether the leukæmia was lymphatic or myelogenic). Even Virchow, acute observer as he was, promulgated the erroneous doctrine that leucocytosis was the result of an influx into the blood of cells from the lymph-glands. After his discovery of leucocythæmia and leucocytosis in 1845, progress in our knowledge of the leucocytes was soon at a standstill, and remained so for more than 30 years; in fact as long as observers restricted themselves to the examination of fresh unstained blood.

The recognition of the various kinds of leucocytes is only possible by staining with a neutral polychromatic combination of stains. Cell-elements, such as nuclei, granules, etc., which

have an affinity for basic dyes (such as methyl blue), stain in these neutral mixtures purely in the colour of the basic dye. Other elements pick out the acid dye (such as Eosin, in a Methyl Blue,—Eosin combination, as “Jenner’s stain”), whilst those cells which have an equal affinity for acid and basic dyes, attract the neutral compound colour as such, and therefore, stain in the mixed colour. (With Jenner’s stain a reddish purple.) If a dried film of normal blood is stained with borax methyl blue alone, the white cells are picked out very distinctly, as their nuclei stain dark blue, whilst all the red cells are coloured a pale green. We are able to distinguish in this way four kinds of colourless cells, viz. :—

- | | | | | | | |
|---------------------------------|---|---|---|---|----|-----------|
| 1. Polynuclear leucocytes | - | - | - | - | 70 | per cent. |
| 2. Lymphocytes | - | - | - | - | 22 | „ |
| 3. Large mononuclear leucocytes | - | - | - | - | 1 | „ |

And similar forms with indented nucleus,

which have been called “transitional” - 3 „

And with Jenner’s stain, two other kinds

can be recognised, viz :—

- | | | | | | | |
|--------------------------|---|---|---|---|-----|---|
| 4. Eosinophil leucocytes | - | - | - | - | 3.5 | „ |
| 5. Mast cells | - | - | - | - | 0.5 | „ |

100

Taking all the kinds of white cells together, normal blood contains about 7,000 to 10,000 per cubic millimetre, or about 1 to 500 red cells. In leucocytosis there may be from 18,000 to 35,000 leucocytes per cubic millimetre or more; and in all instances where this is due to inflammatory reaction, hæmorrhage, etc., it is the polynuclear neutrophil cells which are increased in numbers. These are the cells which wander from the vessels in the formation of pus, being able to effect this migration by means of their amœboid movements. The lymphocytes are not endowed with the power of locomotion, and when found in the blood in great numbers, are present not through any vital activity of their own, but are swept into the bloodstream through the lymphatics mechanically, being present

in abnormal numbers in the lymph channels as the result of an over-production of lymphocytes in the lymph glands and other lymphoid tissue. That form of leucocytosis in which chiefly lymph cells are found, has therefore been called passive leucocytosis, and an extreme degree of this condition constitutes lymphatic leukæmia, a case of which, through the kindness of Dr. Lytle, I have been able to show you this evening.

Active leucocytosis, on the other hand, can, of course, only be produced by cells which have the power of wandering from the blood-forming organs into the blood. The cells which can thus migrate into the blood, can also wander from the blood into the tissues, producing each its own specific form of pus or exudation. The lymph cells as aforesaid, not being motile, are unable to leave the vessels, and therefore a suppuration consisting of lymph cells alone does not occur.

Active leucocytosis has been divided into the following groups:—(a) Polynuclear leucocytosis, which may be either polynuclear neutrophil leucocytosis, or polynuclear eosinophil leucocytosis; (b) mixed leucocytosis, in which both the above forms of leucocytosis occur, plus an enormous influx of “myelocytes” (mono-nuclear granular elements, derived from the bone-marrow) and other abnormal cell-elements.

It would lead me too far afield were I to speak here of leucocytosis in general. But I must remind you that in inflammatory disease, and certain other conditions due to toxins, bacterial products, or certain chemical substances, the swarming of the leucocytes into the blood is due to what has been called “chemiotaxis.” By this we mean the power possessed by chemical substances, toxins, etc., to attract the polynuclear neutrophil or eosinophil cells in great numbers. These, leaving the bone-marrow, where they are produced and stored, issue forth into the blood in unusual profusion, constituting the usual reactionary leucocytosis. The value of this reaction you know well. The white cells either act as phagocytes and devour the bacteria or other irritant, or, becoming themselves disintegrated, set free fluids which exert a bactericidal influence, or act as

anti-toxines. Not every toxin or bacterial product is able to attract the polynuclear leucocytes, for some actually exert a repelling power upon them, which has been named "negative chemiotaxis." Thus in measles, typhoid, and uncomplicated tubercle there is no neutrophil leucocytosis. And in certain diseases, such as pemphigus and trichinosis the leucocytosis consists almost entirely of eosinophil cells, the ordinary neutrophil polynuclears being absent. The poison (whatever it is) of pemphigus seems to have a negative chemiotactic influence upon the ordinary polynuclears, but attracts the eosinophils powerfully, producing in the blood a leucocytosis consisting chiefly of eosinophils, or an "eosinophilia."

The fluid contents of the bullæ in a case of pemphigus was found by Neusser to be an accumulation of eosinophil leucocytes, in fact eosinophil pus. Yet when in a case of pemphigus, this observer produced an ordinary inflammatory focus experimentally by means of a blister, the leucocytosis which followed was of the ordinary polynuclear kind, and the cells in the blister fluid were also polynuclear neutrophils, not a single eosinophil being found.

Having considered briefly the two kinds of polynuclear leucocytosis, namely, the neutrophil and the eosinophil, we are better able to appreciate the extraordinary condition known as leukæmia in which we find an enormous "mixed leucocytosis" of an astonishing extent. Here we have polynuclear neutrophil cells, and eosinophils in great numbers, but besides these there are "myelocytes" (or large mono-nuclear neutrophil granular cells), large mono-nuclear eosinophils, mast cells, and immature forms. In no other known disease is there such a blood-picture as this. The diagrams I show you are drawn from nature, and represent actual microscope fields. The first shows prominently the large myelocytes or bone marrow cells which characterize the disease, and which may constitute 50 per cent. of the total leucocytosis. It has been proposed by some writers to call this condition "myelocytæmia," but as the myelocytes are not the only white cell elements which are in

excess, it seems better to keep to the term "myelogenic leukæmia."

The total leucocytic count reaches on an average nearly 500,000 per cubic millimetre, and this figure is often surpassed.

The Myelocytes = 50 per cent. or 250,000 per cubic millimetre.

Polynuclear	}	= 40	"	"	200,000	"	"
neutrophils							

Polynuclear	}	= 3	"	"	15,000	"	"
eosinophils							

(Sometimes reaching 35,000 or more.)

Mast cells = 2 per cent. or 10,000 per cubic millimetre.

Dwarf and transitional forms of each of the various kinds of leucocyte occur, and also nucleated red corpuscles or normoblasts. Such then is the condition of the blood in myelogenic leukæmia. I think it is scarcely possible to make a wrong diagnosis, or to confuse this with any other form of leucocytosis, or leucocythæmia, if a correct technique is used in examining the blood. There are only two cases in which an error might occur, viz., in lymphatic leukæmia of the acute kind, where large mononuclear cells abound, but are free from granules, so that with ordinary care they should not be mistaken for myelocytes, and in cancer of the bone marrow. In this latter, neutrophil myelocytes in large numbers are found, also nucleated red cells, and, in fact, most of the appearances seen in myelogenic leukæmia. *But the eosinophils are absent*, no doubt from negative chemiotaxis.

Ehrlich therefore rightly insists on the diagnostic value of the presence of eosinophils and mast cells in leukæmia.

As to the etiology of myelogenic leukæmia, I fear we must confess that this is still obscure. Judging from analogy, and from a summary of the facts I have placed before you, I think it will be best, for the present, to consider it the result of a severe reaction of the organism to some poison or irritant unknown, a leucocytosis in which not only the regular army of ordinary leucocytes is called out, but also the reserves, in the shape of eosinophils, myelocytes, and mast cells! I ought to

mention that Löwit has found in the myelocytes plasmodial bodies; but his results have not, so far as I am aware, been confirmed.

I have said nothing yet of the clinical course of the disease.

In three cases of my own, the great muscular weakness and prostration, the distressing dyspnœa on the slightest exertion, and the enormous enlargement of the spleen, were the prominent symptoms. In one case, subcutaneous and intermuscular hæmorrhages were a troublesome and painful complication. In all, gastric attacks occurred at intervals, with vomiting, cerebral symptoms, and diarrhœa. One case ran a very rapid course, ending in coma at the termination of the third month. The other cases had a duration of about eighteen months or two years. In one case large doses of arsenic were given, and the patient made a partial recovery, which, however, was of brief duration, a fatal relapse taking place very speedily.

Dr. McClintock has related to you the very interesting details of Dr. Gardner's case. There is no doubt as to the nature of the blood disease in this man (as you may satisfy yourselves by inspection of the blood-films). Yet the symptoms, so far, have been extremely mild. He says that there is nothing the matter with him, but that he is very weak. Probably we have in this case a very early stage of leukæmia. It is the more worthy of study, as we usually only see the disease when well advanced.

Of the clinical course of acute lymphatic leukæmia I can say little, as I have not hitherto met with a case. It is characterized by its rapid course, small amount of splenic enlargement, and tendency to petechiæ and to a general hæmorrhagic diathesis. It occurs most frequently in young subjects, and is very rapidly fatal, the duration of the disease being not more than two or three months.

Editorial Notice.—CLINICAL LECTURES.

The Editors have pleasure in announcing that they hope to publish a series of Clinical Lectures during the course of the present year. Promises of co-operation have been received from many of the teachers in the Birmingham Medical School, and as far as possible a Lecture will be published every month.

MEDICAL ABSTRACTS.

EXOPHTHALMIC GOITRE.

BY JAMES W. RUSSELL, M A., M D., M.R.C.P.

PATHOLOGY.

Fonctions du Corps Thyroïde. Pathogénie du Goitre Exophtalmique. Par le Dr. Gabriel Gauthier. (*Révue de Médecine*, Mars, 1900.)

The Pathogeny of Exophthalmic Goitre. By Prof. E. Gley, M.D. (*British Medical Journal*, Sep. 21st, 1901.)

The Pathology of Exophthalmic Goitre. By Walter Edmunds, F.R.C.S. (*British Medical Journal*, Sep. 21, 1901.)

Diseases of the Thyroid Gland By George R. Murray, M.A., M.D., F.R.C.P. Part I. (H. K. Lewis, 1900.)

The Erasmus Wilson Lectures on the Pathology and Diseases of the Thyroid Gland. By Walter Edmunds, F.R.C.S. (*Lancet*, May 11th, 18th, and 25th, 1901.)

Recent researches on the functions and pathology of the thyroid gland have thrown not a little light upon the nature of exophthalmic goitre. The old views that the disease was due to a primary cardiac affection or to a neurosis have long been abandoned, and it would seem that the more modern belief in the dependence of the symptoms on an excessive secretion of normal thyroid juice is likely to follow in their wake. This point, however, is one on which opinions are still much divided, and somewhat opposite conclusions are arrived at in the papers quoted above.

The arguments in favour of the hypersecretion theory are ably summed up by Mr. Walter Edmunds in his third Erasmus Wilson Lecture. In the first place, not only is the thyroid enlarged in Graves' disease, but it is seen microscopically to be in a state of active secretion (though this statement, as will be

shown below, is denied by Prof. Gauthier). Thus, the vesicles, instead of being round or square in section, are branched and stellate, the lining membrane is folded on itself, and the secreting cells instead of being cubical are columnar. The colloid substance, however, has partly or wholly disappeared, and its place is taken by a badly-staining mucous secretion. Secondly, there is the most marked contrast between the symptoms of myxœdema, due to absence of thyroid secretion, and those of exophthalmic goitre. Thirdly, Mr. Edmunds claims that most of the symptoms of this disease may be produced by the administration of thyroid extract; and he quotes cases in which such administration has produced palpitation, flushing, rise of temperature, sensations of heat, perspiration, tremors, mental agitation, emaciation, and occasionally a certain degree of exophthalmos. Fourthly, certain cases of ordinary goitre eventually develop symptoms of Graves' disease—an argument which, however, appears to tell at least as strongly against as for the proposition. Fifthly, the excision of part of the goitre is often followed by amelioration or cessation of symptoms—again an argument which may be used on the other side of the controversy. Further support of the hyper-secretion theory is to be found in Mr. Edmunds' experiments recorded in an earlier lecture, in which he found that excision of the thyroid gland and the parathyroids caused retraction of the eyeball and narrowing of the palpebral fissure, and that total parathyroidectomy gave rise to the same symptoms, absence of the secretion thus tending to produce the opposite condition of the eye from that which exists in exophthalmic goitre. In a few cases, however, where the animals survived the operation for some time, and especially those in which the parathyroids were interfered with, some exophthalmos with widening of the fissure subsequently developed.

There is thus undoubtedly at first sight a strong case in favour of the view that a hypersecretion on the part of the thyroid gland is the cause of the symptoms of Graves' disease.

Yet Prof. Gauthier and Prof. Gley, together with other authorities, are strongly opposed to this theory. These observers deny, in the first place, that a true condition of exophthalmic goitre has ever been produced by the administration of thyroid extract. Secondly, Prof. Gauthier remarks upon the difficulty of believing that a condition of cachexia with fever could be due to a mere excess of a normal secretion. Thirdly, the same writer denies that any sign of hyperplasia is to be found in the thyroid in exophthalmic goitre; and his description of the microscopic appearances is most curiously opposed to that given by Mr. Edmunds. Fourthly, the contrast between the symptoms of Graves' disease and those of myxœdema only holds good for the chronic form of the latter disease, and fails entirely in the acute disorder produced in animals by excision of the parathyroid glands. And fifthly, the symptoms caused by the operation just mentioned, and which are due to deficiency of secretion, have several points in common with those of exophthalmic goitre.

These are merely some of the objections which are urged against the hyper-secretion theory. The more positive views of the two French writers depend upon the differences recently shown to exist between the functions of the thyroid gland proper and those of the parathyroids. The importance of these differences is also recognised by Mr. Edmunds. A brief account of the facts at present established on this point may here be given. This account is taken from Prof. Gley's paper mentioned in the references preceding this article, from Mr. Walter Edmund's lectures, and from the book of Dr. Murray.

The existence of four parathyroid glands in close anatomical association with the thyroid has been known for a considerable time, but only recently has any endeavour been made to discriminate between the functions of the two structures. In the human subject the parathyroids are embedded in and inseparable from the thyroid itself. There is one anterior and inferior, and one posterior and superior to each thyroid lobe. In many animals the parathyroids are much more separable from the

main gland, and it is in these that the nature of their functions has been worked out. In structure they consist entirely of cells, and contained no vesicles and no colloid material, or at most a mere trace.

Although the results obtained by excision are by no means uniform, and striking variations are not infrequently observed, yet the following facts may be stated as on the whole established: If in a dog the four parathyroids be removed and the thyroid gland itself left, the animal suffers from symptoms identical with those produced by removal of the whole thyroid apparatus. These commence about forty-eight hours after the operation with fibrillary twitching of the muscles, followed a day or two later by a severe attack of general convulsions. The animal becomes unable to stand, and its limbs are in a state of spastic paralysis; its respirations rise to 200 or more per minute, and the temperature is raised several degrees. This attack lasts for about an hour and then passes off, so that the next day no abnormal symptoms are noticed. The convulsions may recur, and in the course of the next day or two the animal becomes listless and feeble, its hair falls out, and there is difficulty in maintaining equilibrium, followed by rigidity and paralysis of the hind legs. Trophic symptoms then develop in the shape of ulcers on the skin, conjunctivitis and keratitis; the temperature becomes subnormal; and the animal dies about the fifth day.

If the parathyroids and thyroid of one side be excised, leaving those of the opposite side intact, no symptoms are produced; but if at a later period the remaining structures be also removed, the same results follow. If, on the other hand, the thyroid proper be excised, leaving the parathyroids intact, health remains unimpaired, and removal of two or even three parathyroids alone is similarly harmless in its effects. It appears to be doubtful whether removal of the parathyroids alone or total thyroidectomy with parathyroidectomy is the more rapidly fatal operation. The effects produced in cats and rabbits by such operations are similar to those seen in dogs.

The microscopical changes observed in the structures left after

partial operations have an important bearing on the questions under discussion. If the thyroid and parathyroids of one side, together with one parathyroid and a part of the thyroid of the other side, be excised, and the remaining portion of the thyroid left *in situ* be subsequently examined, the vesicles are found to be enlarged and branched, the cubical cells have become columnar, and the colloid material is replaced by a badly-staining mucous secretion. These appearances are identical with those described by Mr. Edmunds in the thyroid of exophthalmic goitre. Again, if, as sometimes happens, an animal survives the operation of total parathyroidectomy, exactly the same changes take place. It would thus appear that removal of the parathyroids causes a hyperplasia of the thyroid structure, together with a marked alteration in the contents of the vesicles; and that the same condition is present in cases of exophthalmic goitre. The alteration in the composition of the contents of the vesicles in Graves' disease is further demonstrated by the fact, established by Prof. Gley, that the thyroid in this condition contains about ten times less iodine than the normal structure.

From these facts Professor Gley draws the conclusion that there is a close connection between the functions of the thyroid and parathyroids, and that the original cause of the symptoms of exophthalmic goitre is a deficiency or alteration, rather than an excess, of secretion. Professor Gauthier goes further, and adopts the theory of Renaut to the effect that the lymphatics of the thyroid are compressed and obliterated by an interstitial cirrhosis, and that a suppression of secreting function with alteration of structure arises in consequence. Prof. Gauthier acknowledges, however, the part played by the parathyroids in the origination of the mischief. He develops this theory at considerable length, and enters into many associated questions; but these are somewhat too complicated for reproduction here.

According to this view the symptoms of exophthalmic goitre must be attributed to the absorption of a poison, in the shape of the altered contents of the thyroid vesicles, consequent on an assumed lesion of the parathyroids. The good effects of

removal of part of the thyroid apparatus would, presumably, be explained on this supposition by the diminution in the quantity of the poison manufactured. The view of an acute poisoning is further supported by Mr. Edmunds' later communication to the British Medical Association, in which he recorded changes in the cord and medulla in a fatal case of Graves' disease closely resembling those described by Dr. Mott as occurring in some forms of acute toxæmia.

To sum up: although a strong case can at first sight be made out for the view that Graves' disease is due to excessive secretion of normal thyroid juice, yet there are many difficulties in the way of its acceptance, and not a few of the facts on which it rests are capable of explanation on other grounds. Present evidence points more strongly to an altered and vitiated secretion as the cause of the symptoms, and certain facts suggest that this alteration is immediately due to a lesion of the parathyroid glands.

In conclusion, it is worth while to point out that the experiments recorded seem to point to a lesion of the parathyroids as the ultimate cause of both exophthalmic goitre and myxœdema. If this proves to be true, the difference in the results produced must probably be accounted for by the difference in the state of the thyroid gland proper. On the one hand, this gland is in a state of increased activity, though the products of its secretion are profoundly altered: on the other, the whole thyroid apparatus is simultaneously atrophied. In the latter case, therefore, the symptoms would be due to complete absence of thyroid secretion; in the former, to poisoning from absorption of a vitiated material.

No reference is made in any of the papers on which this article is based to the theory of an antitoxic action of the thyroid juice. This theory, for which there was never any great amount to be said, appears now to be finally rejected.

Mr. Edmunds further deals in his lectures with the question of the supposed nervous origin of the secretory disturbance. After excising a length of the superior laryngeal nerve and also

of the vago-sympathetic at the level of the thyroid on one side, and removing the thyroid and parathyroids of the opposite side, three out of nine animals operated on died in from one to three days, and four of the remainder developed symptoms similar to those caused by the removal of the whole thyroid apparatus. The remaining portions of the thyroid were subsequently examined in five cases. The colloid material had disappeared from all five; but in four the secreting cells had multiplied into the cavity of the vesicles, whilst in the fifth, which was greatly enlarged, there was a growth of young thyroid tissue between the vesicles. It would therefore appear that the thyroid secretion is under the control of the nervous system, though the consequent changes in the thyroid resulting from operative interference with the secreting nerves were not identical with those observed after removal of the thyroids and parathyroids.

ETIOLOGY AND SYMPTOMS.

A Case of Graves' Disease with Extreme Emaciation. By W. P. Herringham, M.D. (*St. Bartholomew's Hospital Reports, Vol. xxv.*)

The Symptoms Immediately Preceding Death from Exophthalmic Goitre. By A. J. Cleveland, M.D. (*Guy's Hospital Reports, Vol. lv.*)

Dr. J. Popoff. *Neurologisches Centralblatt*, April 15th, 1900. (Abstracted in *The Lancet*, July 7th, 1900.)

Dr. Leonard Guthrie. *Proceedings of the Harveian Society*, Jan. 3rd, 1901. (*Lancet*, Jan. 12th, 1901.)

Dr. Dupré. *Académie de Médecine*, 8 Mai, 1900. (*Le Progrès Médical*, 12 Mai, 1900.)

After reporting a case of exophthalmic goitre with extreme emaciation, Dr. Herringham analyses a series of sixty-two cases taken from the records of St. Bartholomew's Hospital. Six of the patients were males. Twelve of the female patients had had rheumatism or rheumatic fever, and six had organic heart disease. In eight cases some nervous malady was or had been present: epilepsy twice and hysteria three times. Two of the

patients were suffering from phthisis. The families showed a high percentage of disease. In thirty, rheumatism had occurred thrice, heart disease thrice, insanity seven times, and phthisis fourteen times. There was a family history of goitre in four cases, and in one of these the disorder was apparently Graves' disease. Of the six men, two had had rheumatism, one had epilepsy. Two of the families showed phthisis and one insanity.

Twenty-six cases had been followed up. Seven of these patients were dead; two having died of diarrhoea and emaciation, and one in an epileptic fit. Nine patients had improved, one had recovered, eight remained in the same condition, and one had myxœdema.

In five cases some immediate cause could apparently be traced. In two the symptoms came on during pregnancy; and in another they immediately followed an acute illness. In the fourth case the onset dated from a fright; and in the fifth, swelling of the neck was noticed whilst sitting for four hours in wet clothes. In the latter case, palpitation followed almost immediately.

Dr. Cleveland has analysed the symptoms immediately preceding death in thirteen fatal cases of exophthalmic goitre occurring in Guy's Hospital during the last fourteen years. Two of the patients died directly after the operation of removal of part of the thyroid gland, and can hardly be included in the same category as the others; but it is noticeable that the symptoms with which these died were practically identical with those observed in the non-surgical cases. Three other patients with Graves' disease died during the same period, but one of these suffered from mitral regurgitation with failure of compensation; another had severe diabetes with but a slight degree of exophthalmic goitre, and in the third death was due to acute rheumatism complicated by pericarditis and mitral stenosis. These three cases are therefore excluded.

The symptoms preceding death in all the fatal cases consisted of an aggravation of those typical of the disease, namely,

delirium, generally characterised by hysterical outbursts and great restlessness, rise of temperature, quick pulse and respiration, sickness and diarrhoea. Any of these may, and often do, occur alone without involving a fatal result, but their combination is, Dr. Cleveland thinks, almost invariably fatal. Delirium would seem to be the most unfavourable of all the symptoms. In only two out of a series of 70 non-fatal cases was its occurrence noted. In one of these the temperature simultaneously rose to 101° , and the general condition resembled that seen before death: nevertheless, recovery followed. In the other, although there was delirium, sickness, diarrhoea and a rapid pulse, the temperature did not rise and the patient got better.

Alteration of the respiration, both in rate and quality, was a marked feature preceding death in several cases: in four, it was attended by a good deal of cyanosis and distress. Besides being rapid and shallow, it was often noted as "catchy," and in one case a bad prognosis was correctly given, because of the presence of this symptom. In five cases in which respiratory symptoms were marked, the lungs were examined *post-mortem* and found healthy.

In two of the fatal cases, jaundice developed before death. This complication was never noted in any of the non-fatal cases, and it is therefore looked upon as a sign of very bad omen. Simple pigmentation of the skin appeared to have no relation to prognosis.

Of the total series of eighty-six cases examined, complications only occurred in fourteen. Mitral regurgitation was diagnosed five times; but, as in none of the uncomplicated fatal cases was a lesion of the mitral valve found *post-mortem*, it is open to question whether this symptom was not the result of left ventricle dilatation rather than of an actual endocarditis. Acute rheumatism occurred three times, and Raynaud's disease was seen in one of the cases with mitral regurgitation. Phthisis and diabetes each occurred twice.

Autopsies were performed in eleven of the fatal cases. In four of these the brain was not examined. Changes were found

in the brain three times. In one, there was a small recent hæmorrhage between the optic thalamus and the caudate nucleus; in another, changes were found in the floor of the fourth ventricle; and in the third, there was thrombosis of some of the branches of the middle cerebral artery, with acute softening of the parts supplied, and similar changes in the pons. The thymus was enlarged in seven cases. The alimentary tract was congested in three, and the solitary follicles and Peyer's patches were enlarged in two others. Broncho-pneumonia occurred once, the kidneys were enlarged twice without structural alteration, and the spleen was enlarged in one case.

Dr. Cleveland finally notices that, even when the symptoms of the disease are severe, the patients often recover well from other acute illnesses. Thus, acute rheumatism, pericarditis, and lobar pneumonia, occurred as complications without fatal result, and another patient gave a history of having formerly suffered from an attack of pneumonia and nephritis with delirium.

In an editorial note in the *Lancet*, July 7th, 1900, reference is made to a paper by Dr. J. Popoff reporting two cases of exophthalmic goitre with pronounced tendency to hæmorrhage from the mucous membranes. Such a tendency had been observed by the writer in three out of six or seven cases, and he regards it as a valuable early symptom. In the first case, that of a woman of middle age, hæmorrhages from the gums occurred after the extraction of teeth, and also from the vagina and other mucous membranes. She had three attacks of bleeding in thirty-one days, accompanied by extravasations under the skin. The other patient was a woman aged 27; she suffered from hæmorrhages at an early stage of her disease, and six attacks occurred in hospital in the course of five weeks.

An interesting example of the occasional termination of exophthalmic goitre in the condition of myxœdema was recorded by Dr. Leonard Guthrie at the Harveian Society, January 3rd, 1901. The patient was first seen two years previously with symptoms

of Graves' disease. These were apparently greatly relieved by the nightly administration of five grain doses of thyroid extract, and by October, 1899, the goitre had practically disappeared. The patient continued taking the extract until June, 1900, when she was confined to the house by an abscess in the foot, and the treatment was accordingly discontinued. In the following December she returned to the hospital with signs of advanced myxœdema. After a fortnight's treatment with thyroid extract, these also disappeared, but the pulse was then as rapid as it had been when the patient was first seen.

Not many cases have been recorded in which improvement has resulted from the administration of thyroid extract in cases of exophthalmic goitre: indeed, as a rule, the patients do badly with this treatment. Here, however, it seems possible that the change to a condition of myxœdema may have already begun at the time of the patient's first attendance at hospital, and that the improvement in the symptoms may really have been the result of this process, rather than of the administration of the thyroid extract. It will be remembered that a similar change from exophthalmic goitre to myxœdema is reported in one of Dr. Herringham's cases.

An association of exophthalmic goitre with scleroderma has occasionally been observed, and the occurrence of tetany has also been supposed to be dependent on some lesion of the thyroid gland. The case shown by M. Dupré at the Académie de Médecine is, however, noteworthy in that the three conditions were combined in the same individual. The patient was a man who had suffered from Graves' disease since the age of 13. When 24 years of age he began to develop signs of scleroderma in the fronto-nasal region and also in certain areas of the hands. At 29, the same part of the hands became afflicted with tetany, and this extended to the whole of the upper extremities. In this connection it may be noted that Exner (quoted by Mr. Walter Edmunds) produced a condition of tetany by dividing the superior and inferior laryngeal nerves on one side and excising the opposite thyroid lobe.

TREATMENT.

Traitement du goitre exophtalmique par la voltaïsation stable.
Par le Dr. L. R. Régnier. (*Le Progrès Médical*, 10 Février, 1900.)

Dr. Régnier published in 1895 details of a case of exophthalmic goitre which he had treated by the application of the constant current. He now reports that the patient has remained in good health and has had no return of his symptoms; and he also records details of five other cases treated in the same manner. Two of these patients ceased attendance at an early period of the treatment. The remaining three showed very marked improvement. It will be sufficient to give a short abstract of one of these cases. The patient was a woman, aged 22, who attributed her illness to a fright. On admission into hospital the pulse was 120, and the heart slightly dilated. There was slight exophthalmos, and the circumference of the neck measured 32 centimetres. Treatment by the constant current was begun on June 8th: the negative pole, 200 centimetres square, was placed on the spine, the positive pole, 80 centimetres square, on the thyroid. Three applications were made per week, and each sitting lasted twenty minutes. On June 22nd, the pulse was 90, and the circumference of the neck had fallen to 30½ centimetres: the subjective symptoms were distinctly less marked. On July 12th the neck measured 29·8 centimetres, and the improvement was still more marked. On July 31st the pulse rate was 70, and the enlargement of the thyroid had practically disappeared. The patient regarded herself as cured and ceased attendance.

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

Session 1901-1902.

The Third Ordinary Meeting of the Session was held in the Birmingham Medical Institute, on December 12th, 1901, the President, Dr. E. MALINS, and later, Mr. BENNETT MAY, being in the Chair.

Thirty-seven members were present.

Confirmation of Minutes.—The Minutes of the previous Meeting were read, confirmed as amended, and signed.

Acknowledgment of Vote of Condolence.—A letter was read from Mrs. T. Vincent Jackson expressing her thanks for the sympathy of the Members of the Branch.

Election of Members.—The following Members of the Association were elected Members of the Branch, namely—

E. S. Nutting, M.D., Edgbaston, nominated by Prof. Leith ;
E. Whichello, M.B., Birmingham, nominated by Dr. R. Shiels ;
J. A. Wolverson, L.R.C.P. and S., Chapel Ash, nominated by Dr. F. Edge.

Cases of Lupus and Phthisis treated by Koch's Tuberculin R.—
Dr. Saundby showed two cases which were treated last summer in the General Hospital by injections of Koch's Tuberculin R. It was now five months since their dismissal from the hospital and the cure seemed to be permanent.

The following are brief notes of the cases :—

Case I.—W. P., aged 30, admitted May 25th for hæmoptysis ; had been an out-patient for phthisis for a year ; some flattening, dulness, and numerous crepitations at left apex ; tubercle bacilli abundant in sputa ; weight 9 st. 2 lbs. ; treated by injections of Tuberculine R, commencing with mg. 0·002, gradually increased

to mg. 2 ; the treatment caused no rise of temperature. The patient was discharged on July 18th ; he had gained 4 lbs. in weight ; the sputa were examined on July 30th and no tubercle bacilli were found. He has returned to work, is free from cough, and considers himself nearly as strong as he was before his illness. His weight in September was 9 st. 12 lbs., but at present he weighs exactly the same as on his discharge, 9 st. 6 lbs.

Case II.—W. H., aged 10, was admitted on May 16th with an ulcerated lupus involving the nose, both cheeks, and the upper lip ; the disease had existed for three years. The treatment by Tuberculin R was begun on May 21st, and reached mg. 2 by July 17th, when he was discharged. His face was quite healed by July 1st. The cicatrix has remained perfectly sound, pale, and free from any appearance of recurrence of the disease. In both cases the injections of mg. 2 have been continued once a fortnight up to the present time.

Pseudo hypertrophic Paralysis.—Mr. M. A. Messiter showed a boy, aged 10, presenting the characteristic features of this disease.

The Treatment of Lupus, Rodent Ulcer, etc by Finsen Light, Roentgen Rays, and Electrical Currents.—Mr. Hall-Edwards read a paper with the above title, and gave a demonstration of the apparatus used. Remarks were made by Dr. Deanesly, Mr. Heaton, Dr. Saundby, Dr. D'Este Emery, and Mr. Bennett May ; and Mr. Hall-Edwards replied.

The Electric Series Bath.—Dr. J. A. Codd read a paper on this subject, under the following headings, namely—

“Failure of treatment, often due to too little current. Available current-strength limited through painful and caustic effects. These avoided by lessening density by increasing area of electrodes. The local bath an ideal electrode. The ordinary or ‘shunt’ bath,—advantages and disadvantages. Gärtner’s diaphragm. The writer’s ‘series’ bath. Whole body (except head) traversed by current ; exact dosage possible. Solitary disadvantage of absence of stimulation of skin of trunk and thighs.”

On the motion of Mr. Morrison, seconded by Dr. Stacey Wilson, and supported by Mr. Bennett May, it was Resolved "That the best thanks of the meeting be given to Dr. Codd for his valuable Paper."

Dr. Codd expressed his acknowledgment of the vote.

MIDLAND MEDICAL SOCIETY.

The Fourth Ordinary Meeting was held on Wednesday Evening, December 11th, 1901, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the Chair.

Mr. J. B. M. Kennedy, M.R.C.S., was elected a member of the Society.

Gastro-enterostomy.—Mr. Gamgee showed a man, aged 39, upon whom he had performed the operation of gastro-enterostomy. In the autumn of 1900 the patient began to have pain after food, and to vomit occasionally. The symptoms increased severely, and in August, 1901, he was vomiting a quart or more of frothy fluid every two or three days, and his stomach was enormously dilated. He was operated upon on September 6, 1901, and it was found that there was a stricture of the pylorus, due to a puckered-up scar on its anterior surface. An anterior gastro-enterostomy was done, a Murphy's button being used. The symptoms were immediately and completely relieved, and, since being operated upon, the patient's weight had increased 2st. 4½lb.

Peroneal Type of Progressive Muscular Atrophy.—Dr. Duncan Lawrie showed a boy, aged 7 years, suffering from the peroneal type of progressive muscular atrophy. There was no hereditary history, and none of the patient's six brothers and sisters were affected with symptoms of nerve disease. He had had no infectious illness before the commencement of the atrophy.

The main features were—(1) A slowly progressive atrophy of the muscles of the leg, beginning at the age of 18 months, and gradually leading to double talipes equino-varus. (2) The

appearance of atrophy of the hand muscles after an interval of some time—first noticed two years ago—resulting in complete paralysis of all the intrinsic muscles of the hand, which showed the main-en-griffe position due to interosseous paralysis. (3) Loss of sensibility for heat and cold in the feet and legs below knees; no other affection of sensation. (4) The gradual extension of the atrophy in all the limbs with complete paralysis of the first affected muscles. (5) Diminution and final loss of faradic irritability in the affected muscles. (6) The plantar reflexes were represented by movements of thigh muscles, and the knee-jerks were absent.

The talipes equino-varus had been treated by tenotomy on three different occasions, beginning at the age of three years. In August, 1900, the exhibitor had done a tarsectomy on the right side, and with the help of boots fitted with inside irons, the patient was still able to walk fairly well.

Porro's Operation.—Dr. Malins showed a specimen of a pregnant uterus with attached tumour, removed by Porro's Operation. The patient, æt. 42, had had five children, and five miscarriages, the last in 1896.

A tumour was found on the right side of the cervix projecting against the brim of the pelvis and into Douglas's space: semi-elastic, not movable; it was thought to be ovarian. There was little pain or discomfort. The patient was admitted, and the abdomen opened, when the tumour was found to be a myoma on the right side of the cervix under the peritoneum, irregularly rounded, some $4\frac{1}{2}$ inches by $3\frac{1}{2}$. In the prospect of ultimate difficulties at term it was decided to remove the uterus and tumour together. This was done by securing the blood supply in the usual way, and cutting through the lower part of the cervix. The patient made an excellent recovery.

The tumour presented all the appearances of a myoma. The foetus in the left oblique diameter, occipito-posterior. Cases of sub-peritoneal myomata in this situation are very rare, and necessarily dangerous in pregnancy.

Fibroid Uterus removed during Labour.—Dr. Thomas Wilson

showed a foetus, and a uterus with a fibroid the size of a foetal head, which had grown from the posterior wall of the cervix downwards between the peritoneum on the front of Douglas's pouch and the posterior wall of the vagina. The specimens were removed by total puerperal hysterectomy from a patient, æt. 42, on the seventh day after her third labour began. The foetus weighed 9lb., and was beginning to be macerated.

Glandular Ovarian Cyst removed during Pregnancy.—Dr Thomas Wilson also showed a left glandular ovarian cyst removed from a patient, æt. 19, at the fifth month of her first pregnancy. The cyst was placed in the left upper abdomen, and, at first sight, simulated hydronephrosis.

Hydatid Cyst of Pectoralis Minor.—Mr. A. Lucas showed a hydatid cyst, removed from the pectoralis minor of a girl, aged 20.

Epulis.—Mr. Lucas also showed a large epulis, removed by operation.

CLINICAL SOCIETY OF LONDON.

At a meeting of the above Society held Dec. 13, 1901, the President, Mr. HOWARD MARSH, F.R.C.S., in the chair,

After a paper had been read by Dr. S. H. Habershon upon the "Association of Movable Kidney on the Right Side with Symptoms of Hepatic Disturbance," a paper was read by Dr. T. Stacey Wilson upon—

THE THEORY OF COMPENSATION

IN MITRAL INCOMPETENCE AND STENOSIS.

Dr. T. STACEY WILSON in his paper advocated the view that compensation in mitral regurgitation and stenosis depends mainly upon an increase in the aspiratory power of the left ventricle itself rather than upon the right ventricle, that, in other words, compensation under these circumstances depends on a *vis a fronte* rather than upon a *vis a tergo*. In proof of this theory he submitted tables of the loudness of the pulmonary 2nd sound, as measured by

an apparatus he had devised, which showed that in compensated mitral regurgitation and stenosis the pulmonary 2nd sound was of no more than normal loudness; whereas, if compensation depended upon the right ventricle mainly, the pulmonary 2nd sound ought to be louder than normal owing to the increased activity of the right ventricle.

The loudness of the heart sounds was best measured by interposing a thin walled elastic bag (*e.g.* a toy balloon) between the stethoscope and the chest wall, and then by the slow inflation of the bag (by blowing air into it with the mouth) to lift the stethoscope till the sound in question was no longer audible. The height of the chest piece of the stethoscope could then be measured. The height to which the sound could be heard was taken as a gauge of its loudness. For the measurement of the distance in question a small platform was used which slid up and down on three legs graduated in fractions of an inch. By this method it was possible, to a large extent, to differentiate between the apparent loudness of the 2nd pulmonary sound, due to the artery being nearer the chest wall than normal, and true cases of accentuation, and also between true cases of accentuation and those where the sound was merely more slapping than normal without any true increase in its volume.

Out of some 25 separate observations of the loudness of the pulmonary 2nd sound, in fully compensated mitral disease, he found that in 18 instances the pulmonary 2nd sound was inaudible at a distance of 17 sixteenths of an inch from the chest, which might be considered the normal distance, and in only four instances was it heard as much as 20 sixteenths away; whereas, out of 72 observations in cases where compensation was more or less failing, in 42 instances it was audible 20 sixteenths or more from the chest wall.

In order to show in greater detail the bearing of his measurements of the various heart sounds in health and disease, he gave the following summary of the *vis a fronte* theory of compensation, and showed by tables how the measured loudness of the various heart sounds supported the propositions he advanced.

IN MITRAL INCOMPETENCE.

Proposition I.—The process of compensation necessitates dilatation of the cavity of the left ventricle, as well as hypertrophy of its walls, and the amount of dilatation in the compensated heart is directly proportional to the amount of blood which regurgitates into the auricle at each beat of the heart.

As mitral incompetence involves the leakage back into the auricle of a certain part of the contents of the ventricle at each beat of the heart, it therefore follows that in order to compensate for this leakage and allow of a normal amount being thrown into the aorta at each beat,

- (1) Firstly: The ventricle must enlarge so as to hold both the normal amount, and that which will escape back into the auricle.
- (2) Secondly: It must thicken its walls so as to be able to move this additional volume of blood.
- (3) The theory of the enlargement of the ventricular cavity is as follows:—On the first occurrence of regurgitation through the mitral valve a progressive over-distension of the auricle will theoretically result from the leakage of blood back into that chamber. As soon, however, as the size of the auricle exceeds that of the ventricle, the latter will during its expansion be drawing towards itself more blood than it can hold; and the momentum of the blood which cannot find entrance will tend to dilate the cavity of the ventricle. In this way the ventricle will be dilated by its own aspiratory force until its size is comparable to that of the auricle. This will not occur until the ventricle is large enough to hold the full amount of the leakage in addition to its normal contents. (*Vide* writer's paper Clin. Soc. Trans., vol. xxxiv., case 3).

Proposition II.—The dilatation and hypertrophy, which can compensate for the defective working of the left ventricle during systole, will, according to this theory, also relieve the auricle

from embarrassment during diastole by ensuring the proper filling of the ventricle.

For (1) Since the enlarged ventricle is able to accommodate all the regurgitated blood in addition to its normal contents, it follows that it will be as easy for the abnormal amount of blood to enter the abnormally large ventricle as for the normal amount to enter the normal ventricle.

And (2) The increased muscularity of the enlarged ventricle will ensure the slight addition to the aspiratory force which is required to draw the larger amount into the ventricle.

Proposition III.—Therefore by the time the expansion of the ventricle has ceased, the auricle will have been relieved of all the regurgitated blood, and only the normal amount will remain to be dealt with by it.

Proposition IV.—Therefore in fully-compensated mitral regurgitation no extra work will be thrown upon the left auricle, and there will be no embarrassment of the pulmonary circulation and no accentuation of the pulmonary 2nd sound.

Proposition V.—Neither would there be any dilatation of the left auricle unless the regurgitation were extreme.

Since the systole of the auricle and of the ventricle together occupy one half of the cardiac cycle, it follows that only one half of the full volume of blood will normally enter the auricle during this portion of the cycle. Therefore there will be room in the auricle during the ventricular systole for any amount of regurgitated blood up to one half of the total quantity put into circulation at each beat. If, on the other hand, the amount of regurgitation were to exceed one half of the normal output of the ventricle there might be dilatation of the auricle, even when compensation was fully established.

Proposition VI.—According to this theory of compensation there ought to be a slight increase in the loudness of the aortic part of the 2nd sound, because the greater expansile force of

the hypertrophied and dilated ventricle will induce a more powerful recoil of the blood in the aorta, and will result in a more powerful closing and stretching of the aortic valves than in the case of the normally-acting ventricle.

IN MITRAL STENOSIS.

According to this theory, the left ventricle increases its aspiratory power in order to facilitate the entry of blood through the narrowed orifice, and so establish compensation. This is brought about as follows :

Proposition VII.—In mitral stenosis the left ventricle contracts with greater force than normal in order that the rebound, both muscular and elastic, may be correspondingly increased.

- (1) An evidence of this is the increased loudness of the 1st sound which occurs in mitral stenosis.
- (2) Temporary embarrassment of the circulation is accompanied by an increase, often excessive, in the loudness of the 1st sound, which lessens again as the circulation improves.
- (3) This increase in the force of the ventricular contraction is also suggested by the occurrence of the hypertrophy of the left ventricle, which is not infrequently noticed in mitral stenosis.

Proposition VIII.—The left ventricle alters its beat. Its contraction terminates with greater suddenness and force than normal. This concentration of ventricular effort at the termination of the systole has the effect of further increasing the force of the ventricular recoil which immediately follows the systole, lasting as it does only 1-10th of a second.

- (1) This is the explanation of the sharp and loud end of the 1st sound which is so characteristic of mitral stenosis.
- (2) The characteristic cardiograms of mitral stenosis often show a more sudden recession of the heart from the chest wall at the end of the systole than in the normally-beating heart.

Proposition IX.—As a result of this additional aspiration the

auricle can be relieved of much, if not all of the additional work which the narrowness of the mitral valve entails. We find very frequently an absence of dilatation of the left auricle in mitral stenosis where compensation was perfect at the time of death. (*Vide* Dr. Samways, *British Medical Journal*, ii., 98, p. 365.)

Proposition X.—Therefore in compensated mitral stenosis, if the narrowing be not very excessive, no extra work is thrown upon the right side of the heart, and there is no engorgement of the lungs.

- (1) As evidence of this, we find the pulmonary 2nd sound of normal loudness, even in cases of severe mitral stenosis.
- (2) We find that the accentuation of the pulmonary 2nd sound which is characteristic of failing compensation, gradually lessens as compensation improves.
- (3) We may find no clinical evidences of pulmonary congestion or engorgement even in severe cases of mitral stenosis.

Proposition XI.—We may also expect some increase in the loudness of the aortic 2nd sound, apart from that due to increased arterial pressure, because of the increased ventricular aspiration, as suggested in proposition VI.

In conclusion he referred to the importance which the acceptance of this theory would have upon therapeutics, because of our almost complete ignorance, at the present time, of the influence which the various cardiac tonics exercise upon the expansile power of the cardiac muscle upon which so much depends in mitral disease.

REVIEWS.

DISEASES OF THE STOMACH AND THEIR SURGICAL TREATMENT.*

No one in this country is better able to deal with the Surgery of the Stomach than Mr. Mayo Robson, his Hunterian Lectures of 1900 established for him an unrivalled reputation in this special department, and the volume now before us, published in conjunction with Mr. Moynihan, will fully maintain his great fame as an abdominal surgeon. That this is a valuable contribution to the literature of English surgery there can be no doubt; the record of extensive experience and the authoritative opinions based thereon must inevitably widen the province of gastric surgery in this country. The subject matter is well arranged and written in unmistakable language.

The volume contains three hundred pages, and is published in a highly attractive manner. Every chapter is so pervaded with practical common sense, and so supplemented by personal experience, that interest never flags for a moment. Here and there more detail and more exactness might have been desired, but the work cannot fail to form a valuable guide to less experienced surgeons, while it will create fresh incentive to exact observation in future workers.

The anatomical bearings of the stomach are given in a clear and concise manner, special stress being laid upon its position and natural variations, matters which, strange to say, still require emphasis.

The chapter on methods of examination is on the whole characterised by great care and precision. A chemical examination of digestion, however, cannot be considered complete without the estimation of gastric acidity, or the investigation of the presence and functional activity of such ferments as pepsin

* Diseases of the Stomach and their Surgical Treatment. By Mayo Robson and Moynihan. London: Baillière, Tindall and Cox.

and rennin. Complete chemical examinations of proteid and carbohydrate digestion have been entirely passed over by the authors. Gastric absorption is not touched upon in this chapter, though it receives mention in connection with carcinoma. With such extensive experience as that of the authors, one cannot help thinking had more careful examinations of digestive processes been made the records would have been of great value to future workers. It is only by accumulated statistics that the true significance of altered chemistry in gastric disease is likely to be revealed.

We heartily agree with the strong plea put forward for early exploratory incision in all doubtful cases of gastric disease suggesting the possibility of carcinoma. The risk of such a measure has fallen almost to a minimum, and as the authors clearly point out, it might make all the difference between palliative and radical measures. Gastrostomy, with its well defined indications is dealt with in a practical and masterly manner.

"Congenital diseases" and "Injuries of the Stomach" occupy two short chapters, both of which are very interesting and form worthy examples of the thoroughly practical nature of this excellent work.

Simple tumours of the stomach, though of rare occurrence, have received very careful attention, and the sound classification, briefly recorded cases and graphic illustrations make the article very complete.

The chapter on Carcinoma is one of great clinical value, the elaboration of which must have involved prolonged reading to the authors. The statistics collected are as valuable as they are interesting. The careful sifting of physical signs, especially those revealed by chemical and hæmatological examinations is admirable. The strong appeal made for early exploratory incision before the appearance of any tumour cannot have been made in vain. The confident advocacy by a pioneer like Mayo Robson of pylorotomy or partial gastrectomy wherever possible is as natural as it is convincing. There can be no doubt that in

this matter we require not only early diagnosis but also, deliberate courage and the manipulative skill obtained only by frequent rehearsal.

After the necessarily short account of sarcoma of the stomach, we are brought to the great feature of the book, viz., "gastric ulcer, with its numerous complications." No candid physician can lose sight of the great sense of proportion and extreme fairness shown by Mr. Robson and Mr. Moynihan in this matter. Their accumulated statistics prove conclusively that the physician will act wisely by seeking frequently the co-operation of the surgeon in dealing with cases of gastric ulcer. The division of ulcer into acute and chronic, though to some extent arbitrary, is of great practical value, the relative frequency of each according to age and sex, as well as their separate sequelæ, help us in clearing up many paradoxical facts, and place the subject altogether upon a more scientific basis. We should scarcely be so sanguine as the authors of the value of local tenderness and postural pain in diagnosing the site of ulceration. The complications of gastric ulcer are given with exhaustive fulness.

In dealing with treatment the authors might with great advantage have dwelt in more detail upon the question of after-treatment. Little or nothing is said concerning the complications likely to follow such operations as gastro-enterostomy, and we look in vain for detailed guidance in reference to feeding, general stimulation, and regulating of the bowels.

The recorded work done upon Prof. Carle's cases of gastro-enterostomy by Dr. Fastino, in reference to the altered gastric physiology and pathology as a result of the operation, is of very great scientific value. These results, compared so carefully with similar work done by the authors after pyloroplasty, show that the latter operation, although to all appearance a better imitation of nature, is by no means so satisfactory as that of gastro-enterostomy. The restricted indications for pyloroplasty are well defined.

It is refreshing to learn that the whole operation of posterior

gastro-enterostomy by suture over Robson's bobbin can be performed by the authors in thirty or even in fifteen minutes; this is indeed a triumph of dexterity and experience. Gastror-rhagia is dealt with in the same thorough manner as the other subjects, and physicians would do well to accept the timely suggestions which are given in this article. Persistent, and obstinate hæmatemesis, or hæmatemesis threatening life, must now be regarded as a surgical malady, requiring surgical measures for its efficient treatment. The four cases of gastror-rhagia recorded by Mr. Robson are very conclusive and highly encouraging. One of the most graphic chapters in the book is devoted to perforating gastric ulcer. Little or nothing is added to the literature of the subject beyond the authors' classification and rich experience. Special emphasis, however, is put upon important matters, and the general principles are so sound, that if universally adopted we should receive more encouragement and success in dealing with this appalling catastrophe. In reference to the relative frequency of acquired hour-glass stomach compared with the congenital variety we entirely agree with the authors. That many cases of so-called congenital hour-glass stomach are really the result of old ulceration there can be no doubt, but whether the congenital variety is really a myth, as suggested, we would hesitate to affirm. The authors have invested this subject with wonderful interest. The observations made and collected by them upon its characteristic signs are highly ingenious. Their extensive experience entitles them to be dogmatic, but although their great method of procedure is gastropasty, we would venture to express the opinion that gastro-enterostomy with the proximal chamber of the stomach is worthy of further trial.

Advanced gastric dilatation, which is one of the commonest sequelæ of ulceration, is now a surgical condition. Mr. Mayo Robson's wonderful results will do much to encourage physicians to co-operate with the surgeon in the treatment of this troublesome disease. We cannot help regretting that the authors have not more emphatically condemned the unsatis-

factory operation of pylorodiosis. Digital dilatation is a very gross surgical procedure, and pyloric stenosis has many degrees of intensity. The degree of dilatation suitable varies not only with the calibre of the opening but also with the extensibility and contractility of its walls, qualities which are extremely difficult to determine. Moreover, it is a dangerous operation, giving a high mortality, and recurrence of the disease is liable to follow. Much more is to be gained by performing pyloroplasty, though this operation has but a restricted application. Gastro-enterostomy, however, is the great operation for gastric dilatation, and the extremely low mortality of five per cent. obtained by the authors is enough to show that this measure is eminently satisfactory. A stronger appeal to physicians could not be made.

Acute gastric dilatation though full of interest is still shrouded in mystery. Until we can determine with accuracy the true nature of this remarkable disease we are not likely to succeed in making it yield to surgical measures.

Atonic dilatation is treated by gastroplication, the best method of which has been devised by Mr. Moynihan. It is very doubtful whether this cumbersome looking surgical procedure can ever supplant the more popular method of gastro-jejunostomy. Perigastritis as this work clearly shows is by no means an uncommon condition, for which the authors confidently recommend gastrolysis as the great line of treatment.

Gastric fistula is dealt with in a very careful manner. For gastroptosis, or Glenard's disease, which in its pure condition, must be a rare occurrence, has been recommended the operation of gastro-pexy. Experience alone can teach us whether this surgical measure is of much value or not.

Tubercle, syphilis and phlegmonous inflammation all receive the authors' careful consideration. They are described in the same practical manner and invested with the same scientific interest as the other subjects. The work closes with an excellent description of the more important operations upon the stomach.

Mr. Robson's unrivalled experience entitles him to speak very forcibly of the merits of each operation, and his wonderful results vouch for his good judgment and great dexterity. Each operation is described in a short graphic manner, with diagrams so lucid that little context is required to supplement them. The remarkably low mortality of Mr. Robson's posterior gastro-jejunostomies must give a considerable impetus to the use of the suture method over that of union by Murphy's button.

It is now generally recognised that Von Hacker's operation has great theoretical and practical advantages over the Wolfer, and it is just such a record as Mr. Robson's which will engender the necessary courage to make this operation more frequently attempted.

In conclusion, we heartily congratulate the authors, and indeed the Leeds Medical School, upon the very excellent character of this book, and the high standard of gastric surgery carried on in their midst.

A TEXT-BOOK OF MEDICINE.*

WE are heartily glad to welcome the appearance of a new edition of Fagge's Text-Book of Medicine, to give it the title by which it will always be best known to students of medicine. In truth, however, the handiwork of its original author is becoming smaller in amount as each successive edition is published, and that of its able editor—or now indeed co-author—Dr. Pye-Smith, occupies an ever increasing share of its pages. But so ably has Dr. Pye-Smith done his work, and so entirely is he in sympathy with the spirit of his former colleague, that the book still retains the peculiar stamp of its original authorship. This is, indeed, to give high praise to the writer who

* A Text-Book of Medicine. Begun by the late Charles Hilton Fagge, M.D., F.R.C.P., sometime Physician to Guy's Hospital; completed after his death and since revised or rewritten by Philip Henry Pye-Smith, M.D., F.R.S., F.R.C.P., Consulting Physician to Guy's Hospital. Fourth Edition. Vol. I. London: J. and A. Churchill. 1901,

first undertook the difficult task of completing Dr. Fagge's unfinished work, and has since brought the text up to date without interfering one jot more than necessary with its original foundation.

We know of no text-book of medicine which is in the least comparable with the work of Drs. Fagge and Pye-Smith. Doubtless, there are others as excellent in their particular way, but this is not the way of the two Guy's physicians. By some means or other—partly, no doubt, by the frequent reference to cases, partly by the fulness of clinical detail, but in addition by some peculiar characteristic which it is hard to identify—the descriptions of the various diseases are given a clinical interest which is quite unique. It is true that this result is attained somewhat at the expense of conciseness, and we can imagine that for purposes of preparation for examinations, other text-books may be more widely appreciated. But for the keen clinical student, Fagge's text-book will, we believe, continue to hold the first place.

We cannot enter into detailed criticism of the various sections of the book. It must suffice to say that the whole work has been most carefully revised, and that, as far as we have been able to judge, it has been brought entirely abreast with the modern developments of medicine. At present only the first volume has been published, and this deals, in addition to certain introductory matters, with the specific diseases, diabetes, the various forms of arthritis, rickets, the diseases of the nervous system, and the first half—including the diseases of the bronchi and pleura—of those of the respiratory system. We are glad to learn that the second volume is already in the press, and that its publication may shortly be expected.

SYLLABUS OF LECTURES TO NURSES.*

THIS book contains merely brief notes for the delivery of lectures to nurses, and they will doubtless prove useful to those who feel it a matter of difficulty to sketch out such a course for themselves. As usual, the lectures seem to us to contain far too much anatomy and physiology, and too little of the practical details which are so much needed by nurses; but in this they do but follow the example of nearly every book on nursing which we have been privileged to review. A great want, in our opinion, in all these books is a series of careful directions for watching the patients in the several diseases, and an explanation of the particular difficulties and dangers which are likely to occur in particular conditions. Such instructions would, we think, be of far greater practical value to a nurse than a description of the structure of the brain and spinal cord, or of the various coats of the alimentary tube. But a really practical course of lectures has yet to be written.

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New Books, etc., Received.

From Rebman Limited—

A System of Physiologic Therapeutics. Edited by SOLOMON SOLIS COHEN, A.M., M.D. Volume IV. Climatology—Health Resorts—Mineral Springs. By F. PARKES WEBER, M.A., M.D., F.R.C.P. (Lond.), with the collaboration for America of GUY HINSDALE, A.M., M.D.

* Syllabus of Lectures to Nurses. By Andrew Davidson, M.D., Port Health Officer, Singapore. London: The Scientific Press, Limited.

From W. B. Saunders and Company—

A Text-Book of Pharmacology and some Allied Sciences. By TORALD SOLLMANN, M.D.

Human Physiology. By JOSEPH HOWARD RAYMOND, A.M., M.D. Second edition.

A Manual of the Practice of Medicine. By GEORGE ROE LOCKWOOD, M.D. Second edition.

Atlas of Bacteriology. By Prof. Dr. R. B. LEHMANN and Dr. R. O. NEUMANN. Edited by GEORGE H. WEAVER, M.D. Parts I. and II.

A Laboratory Handbook of Urine Analysis and Physiological Chemistry. By CHARLES G. L. WOLF, B.A., M.D.

Nothnagel's Encyclopædia of Practical Medicine. Typhoid Fever. and Typhus Fever. By Dr. H. CURSCHMANN. Edited with additions by WILLIAM OSLER, M.D. Authorised Translation from the German, under the editorial supervision of ALFRED STENGEL, M.D.

From Macmillan and Co., London—

On Disorders of Assimilation and Digestion, etc. By SIR LAUDER BRUNTON.

The Healing of Nerves. By CHARLES A. BALLANCE, M.S., F.R.C.S. and PURVES STEWART, M.A., M.D., M.R.C.P.

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We have also to acknowledge the following—

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ORIGINAL COMMUNICATIONS.

EPILEPSY.

A CLINICAL LECTURE.

BY ROBERT SAUNDEY, M.D., M.SC., LL.D., F.R.C.P.,
PROFESSOR OF MEDICINE IN THE UNIVERSITY OF BIRMINGHAM, AND
PHYSICIAN TO THE GENERAL HOSPITAL.

ALTHOUGH it may be impossible to define in two or three words what we mean by epilepsy, it is a perfectly distinct group of symptoms, and whether we consider our knowledge of its symptomatology, diagnosis, prognosis, or treatment, compares favourably with other diseases, especially those of the nervous system.

The essential phenomenon of epilepsy is loss of consciousness, which may or may not be accompanied by other symptoms. but just as we do not say that a man is diabetic because sugar may appear temporarily in his urine, so we should not be justified in speaking of epilepsy unless this essential sign recurs with more or less frequency. Moreover, we recognise that infants and young children are extremely liable to suffer from convulsions not distinguishable from epilepsy, but which cease in most instances after the age of infancy is passed, and as a rule are easily traced to gastro-intestinal irritation, improper diet, the presence of worms, etc. Such instability of the nervous system, which is normal in young children, would be abnormal at a later

age, and convulsive fits occur, if at all, only under very exceptional circumstances in the adult, but it must be admitted that we meet with the case occasionally of a person who has never had an epileptic fit and in whom, so far as we are able to observe, no recurrence takes place, but yet who may have had a single epileptic fit as the result of an indigestible meal or an excessive dose of alcohol. It is probable that even in these instances there is a relative degree of instability of the nervous system, but as we have no absolute standard of what is normal we are not able to speak positively about this.

MAJOR EPILEPSY.

Epilepsy is best known in its fully developed form (epilepsia major) where the loss of consciousness is accompanied by convulsions. In a typical case the patient, with or without some preceding warning the so called aura, falls suddenly with a groan or cry and the muscles on one side or both sides of the body are drawn into a tonic contraction causing flexion of the extremities and frequently rotation of the body, head and eyes. This tonic spasm is succeeded by clonic or jerking movements, the face becomes swollen and purple, the tongue is protruded, and blood-stained froth, from the tongue being bitten during the spasm of the jaws, appears upon the lips. The movements which are at first violent become gradually weaker and finally cease, the body coming to rest with the limbs extended. During the attack the breathing is stertorous and the sphincters may give way. After it is over the patient remains for some time in a comatose condition and awakes with no recollection of what has happened to him. He may complain of headache or of soreness in consequence of injuries received during the fit such as a bitten tongue or a bruise gained in falling, but is otherwise quite well and is soon able to continue whatever he may have been engaged in when the fit seized him.

MINOR EPILEPSY.

In the less developed form (epilepsia minor) the attack may consist in merely temporary loss of consciousness. For example,

the patient may suddenly stop what he is doing for a few seconds, then recover himself and continue his interrupted conversation or occupation. In some cases it is said that movements may be automatically continued, even during the loss of consciousness, as in a case related by Trousseau where a musician engaged in the orchestra of a theatre continued to play the score during his attack, but this is exceptional. As a rule the patient if walking stops, or if writing, or speaking, or eating, there is a similar arrest of movement for a few seconds and the patient's face and eyes are fixed; there may be a little incoherent muttering; the sphincters are sometimes relaxed, most often the sphincter urinæ, but this is happily rare. In some cases the attack is so transient that it may be long before relations or friends regard it as anything serious, but attribute it to "absence of mind" or "inattention"; children are told that they have been "dreaming" and the condition is indeed so slight that it would have no importance if it were not the frequent forerunner of more serious symptoms.

EPILEPTIC AUTOMATISM.

In an exceedingly interesting group of cases the loss of consciousness is of longer duration and may last a considerable time, during which the patient is in the condition of an automaton or somnambulist and may perform complex actions for which he is not responsible. For example, he may have a laughing fit lasting some minutes, but when he comes to himself and is asked why he has been laughing he is quite unable to explain and does not recollect having done so; or at other times, I am quoting from a case recently seen, he may appear to be frightened and ask to be protected against an imaginary danger, or he may put on his hat, go out of doors, and walk a considerable distance before he comes to himself. Some years ago I had a case of this kind in a young man engaged in a printing establishment who used often to go out and walk about for twenty minutes or more before he regained consciousness of what he was doing. This man, on more than one occasion when in this condition, did things which would

have exposed him to grave censure if it had not been known that he was not responsible for his actions, and in fact it has often happened that under these circumstances epileptics have committed criminal acts. The best known of these are maniacal and homicidal outbursts of rage leading to assaults of a more or less serious kind. These attacks are of the highest interest and importance, not only from a medico-legal point of view, but also from that of ordinary practice, for they may be not recognised or are misunderstood and are confounded with hysteria or malingering.

DIAGNOSIS.

The differentiation of epilepsy in any of its forms from hysteria and malingering may be difficult in practice, because the loss of consciousness is the only point which is really characteristic of true epilepsy, and where we cannot rely upon the statements of the patient it may be impossible to get trustworthy evidence. As a rule, the patient is unaware of the importance of this point, and throws light upon the case by professing to know all that has been going on during an attack, while laying stress upon his total inability to exercise control over his movements. It is perfectly certain that epileptic fits can be simulated with great success, as was well shown in a case related some years ago of a convict, who died in prison in the United States after having confessed his history to the prison surgeon. This man, an Englishman by birth, had been in the habit when in England of simulating fits in the street with the object of collecting crowds, while his confederates picked the people's pockets. He had been several times in prison, and had been always able to pass his time in the hospital. After making England too hot to hold him, he crossed the Atlantic to the United States where he carried on the same game. He there got into jail, and following his usual practice he was admitted into hospital for epilepsy. Owing to certain circumstances the prison surgeon suspected fraud and sent him back to work. Apparently to impress the authorities

with the genuineness of his attacks he had a fit when he was going up an unprotected staircase, and unfortunately fell a considerable distance to the ground, fracturing his skull and meeting with other injuries. He did not die at once, but was an inmate of the hospital for a considerable time, and, if I recollect rightly, it was when he knew that he would probably never be able to get about again that he made his confession to the prison surgeon. Trousseau relates that Esquirol believed it was impossible to simulate an epileptic attack in all its features, and had been discussing the point with Calmeil. All at once Calmeil fell on the floor in convulsions, and Esquirol after examining him turned to Trousseau and said, "Poor fellow, he is epileptic!" Hardly had he finished the sentence when Calmeil got up and asked him if he still believed that it was impossible to simulate epilepsy. In spite of this, Trousseau believed that Esquirol was right, as in his opinion no false epileptic would venture to fall in such a way as to hurt himself, but the story just related proves that we cannot rely upon this. Indian fakirs appear to possess the power of throwing themselves at will into an epileptic convulsion, although I cannot say that they lose consciousness. Of course it is only rarely that a feigned or hysterical fit has any close resemblance to a true attack of epilepsy. In most hysterical convulsive attacks the patient screams all the time, clings to the furniture or persons near, bites, strikes, or scratches, closes the eyes vigorously, and resists all attempts to test the sensitiveness of the conjunctivæ. No doubt, too, they take care to fall softly, and do not waste attacks when nobody is near to be edified, but they certainly may and do hurt themselves, as I have seen a hysterical patient strike her head repeatedly upon a hard wooden floor, her indifference to pain being probably due to the analgesia or loss of cutaneous sensibility, known to be a pretty constant symptom of hysteria.

Syncopal attacks may bear some resemblance to incomplete epilepsy, although the analogy is generally the other way, incomplete epilepsy being taken for a simple attack of fainting.

In fainting there is pallor, pulselessness, and the condition does not pass away so rapidly as in incomplete epilepsy. There is often also anæmia or some sufficient cause to account for the seizure, but the loss of consciousness may not be complete, and when it is there is no spasm, but on the contrary all the voluntary muscles are relaxed. Wherever it is possible it is most desirable to see the patient in one of the alleged fits before expressing an unguarded opinion, as the reports of relatives are not always perfectly trustworthy.

Although convulsions are exceedingly common in infancy they generally cease after the first dentition. True epilepsy begins for the most part after the second dentition, and most commonly about puberty. It is doubtful how far somnambulism and night frights bear any relation to epilepsy; there is occasionally some association, but more often there is none. Convulsions occurring between the first and second dentition are generally attributable to intestinal worms or to organic brain disease, such as tubercle.

The frequency of the fits varies very greatly from several times a week to as many times in a year. In the status epilepticus one fit may succeed another without any interval. In many cases the fits only occur at night, or just after rising in the morning. They may be very long unsuspected, although the patient presents symptoms which call for explanation, such as impairment of memory and mental power, lassitude, and loss of energy; he may complain of sleep being unrefreshing, of waking with a headache in the morning, and of soreness or aching in the limbs. Under such circumstances the tongue should be examined for teeth marks, petechiæ looked for on the forehead at the margin of the scalp, and enquiry made for the occurrence of any such accident as wetting the bed. True epilepsy rarely begins late in life, in fact, after adolescence the diagnosis of primary idiopathic epilepsy should not be too readily accepted, as the convulsions are much more likely to be due to a cerebral growth, more especially a gumma, or to uræmia, or lead poisoning, or alcohol. At the same time, where

there is a family history of epilepsy, and no evidence pointing to other conditions, it may quite well be that the disease shows itself late, and under these circumstances, the fits generally occur only at long intervals, and are therefore not of much importance. Such may have been the epilepsy of Cæsar, Mahomed, and the great Napoleon, for certainly it is difficult to believe that frequent epileptic fits can be consistent with the preservation of great mental power. I have never been able to come across the foundation for the statement that the great Napoleon was epileptic, certainly neither Bourienne, his early friend from schooldays, nor his valet Constant, nor O'Meara, his doctor and companion in St. Helena, refers to such an occurrence. Constant cannot be called discreetly reticent, as he goes into all sorts of private details about his great master, and there is no reason to believe he would have concealed the occurrence of a fit, had he ever witnessed one during the ten or twelve years he was constantly with the Emperor. If Napoleon ever had a fit it was unquestionably a very rare and exceptional accident.

PATHOLOGY.

The pathology of epilepsy need not detain us very long as too little is known about it. It may be taken as certain that the disease does not depend upon any morbid anatomical change, using this expression in its ordinary meaning, that is, change appreciable by our senses aided by such instruments and methods of investigation as we at present possess. All the structural lesions which have been described as present in the brains of epileptic persons have been either secondary, inconstant, or accidental. Experiments upon animals have shown that it is perfectly easy to simulate an epileptic fit by cutting off the circulation from the brain and the theory that the immediate cause of an attack is vaso-motor spasm of the cerebral arterioles is very generally entertained. Some years ago Dr. Walter Moxon pointed out that at least in some cases there is temporary arrest or intermission of the heart's action just at the beginning of a fit. Such vaso-motor spasm might quite conceivably be the result

of peripheral irritation, but obviously it does not usually follow and we have to assume the existence of some constitutional tendency in epileptic persons concerning the nature of which we are wholly ignorant.

CAUSATION.

Epilepsy often occurs in different members of the same family and probably is rightly called hereditary, that is to say, the special instability of the nervous system upon which it depends may show itself with more or less frequency in different individuals owning a common parentage. This instability seems to be indifferently transmitted by either parent, that is to say, the tendency to epilepsy may be transmitted by either a mother or a father belonging to a family in which this taint exists. It is often associated with other nervous manifestations especially insanity, migraine, hysteria, etc. The disease appears to occur with about equal frequency in both sexes. No station of life is exempt and there is not any ground for the belief that the disease depends upon occupation or mode of life; it is doubtless a form of degeneration and is more likely to occur in the offspring of a population poisoned by alcohol, bad air, improper food, and the unwholesome surroundings which undoubtedly in the past and to some extent in the present are the features of city life among the poor.

The late Prof. Brown-Séquard thought that he had succeeded in showing that guinea-pigs could be rendered epileptic by section of the sympathetic nerve on one side of the neck. This operation produced a sensitive area on one side of the face, irritation of which caused an epileptic fit. He maintained that the epileptic predisposition so produced was transmitted to the descendants of the animals operated upon. The experiments seemed very conclusive, but I do not know that they have been repeated by anybody and the epileptic race of guinea-pigs shared the fate of the animals in the Jardin des Plantes by serving as food during the siege of Paris. Great doubt has existed in my mind as to their value since I have learnt that epilepsy is exceedingly common among guinea-pigs.

The immediate exciting cause of an epileptic fit is not infrequently a violent emotion, such as fear or anger, and the origin of the disease in many persons is attributed to fright. We must however recognise the comparatively slight subsequent importance of the particular sensory impression which overthrows the very unstable equilibrium of the nervous system in these patients. More commonly we find that no definite cause can be assigned, but it is always possible there may be a normal or abnormal visceral stimulus starting from the digestive or generative organs. Certain conditions appear to exercise a restraining influence upon the fits; for example, they may cease during pregnancy or the course of a severe fever and return after parturition or as recovery sets in. A case of very severe epilepsy fell during a fit, and burnt himself severely on the buttock, so that for some months he had a large open sore six inches in diameter, during which period he enjoyed complete freedom from the fits, but as healing took place they returned. A seton was introduced in order to try to imitate the effect of the burn, but proved ineffective.

Somewhat similar was the case of the late Pope, Pius IX, who was said to have an ulcer on his leg which was always kept open, as its healing was followed by an epileptic seizure. Among the same class of phenomena must be reckoned those cases where the fit is preceded by a sensation, an aura as it is called, starting from one or other extremity, and the fit may be arrested or prevented by tying a ligature tightly round the limb in question. It is of course quite possible that the feeling described as being in the limb may be only referred there, and may actually be due to changes taking place in the corresponding brain centre, but nevertheless, the tight ligature, perhaps by the painful impression produced, stimulates nerve currents which, when transmitted to the centre, arrest the progress of the disturbance. I am not advancing this as a fact, but as a speculation upon the mechanism by which the arrest of the fit is effected; whatever be the explanation there can be no doubt at all that such an arrest does take place.

I have already referred to the fact that epileptic convulsions may be due to poisoning by lead or alcohol, or to defective renal excretion in Bright's disease. A few years ago we had in Birmingham a good many cases of the convulsive form of lead poisoning among the workers at enamelled metal signs. The poisoning took place very rapidly, for many of those attacked had only been a few months at work, and several died, so that there was a public outcry, and changes were introduced into the methods of manufacture which seem to have been effectual. The diagnosis was easy, as there was a well-marked blue line on the gums, and enquiry soon showed the source of the poisoning. I do not believe that convulsions ever occur unless the quantity of lead absorbed into the system is very large. The relation to alcohol is generally easily traced as the necessary dose is large, the patient has been very drunk, and the facts are easily elicited. Where there is a desire to conceal the alcoholic habit, as sometimes occurs in women, especially if living alone, it is possible that there may be a difficulty about the diagnosis, but in such cases, in all probability, the occurrence of the fit also would be concealed. Whenever we have to do with a case of seeming epilepsy, in which there is a history that the fits have commenced recently, it is our duty to exclude such possible causes of convulsions as Bright's disease and intracranial growths. As albumen is very frequently met with in the urine immediately after a fit, this must be allowed for, and a specimen examined which is not open to this objection, but in addition we should estimate the total urea excretion, look for casts, cardiovascular changes, retinitis, etc. A cerebral tumour may be slow in revealing itself, but we may enquire for headache, vomiting, and double optic neuritis. There is a form of neuro-retinitis which seems to be common to Bright's disease and cerebral tumour, so that mistakes have been made in both directions. Cases of this kind have been recorded by several writers. These blunders should not be made now we know how fallacious such signs are, and realise the importance of basing a diagnosis of Bright's disease upon more than either albuminuria or retinal

changes. Caution is all the more necessary as I have found that post-epileptic albuminuria may persist for several days after the occurrence of a fit.

PROGNOSIS.

On the whole we may say that a correct diagnosis in epilepsy can only be made by a careful study of the case, but that it does not present any difficulties which may not be got over by the exercise of a moderate amount of care. Epileptic fits are rarely fatal, but may sometimes cause death by choking from food, false teeth, etc., getting impacted in the larynx, or fatal injuries may result from falls, burns, etc. The usual sequel is mental impairment which seems to develop in proportion to the frequency of the fits. In this respect minor attacks are as important as major. Epileptics are peculiarly liable to death from cerebral hæmorrhage and pneumonia, or true serous apoplexy may come on after a fit or succession of fits and end fatally. Persons subject to epileptic fits are not eligible candidates for life insurance, but where the fits have ceased for some years and the family history is good, it may be possible to accept the life with some addition to the premium.

The question of the marriage of epileptics is one upon which medical practitioners are often consulted and should be able to express themselves with no uncertain sound. Where the fits have ceased under treatment and the disease appears to have been cured, or where fits occur only after an interval of a year or more, marriage may be permitted, but where in spite of treatment the fits continue, whether these are major or minor, marriage should be forbidden and it is the duty of the medical practitioner to point out that not only is epilepsy a hereditary disease, but that, when incurable, it is practically certain to cause mental deterioration and alteration of character and disposition as time goes on. No one who has not watched the change taking place can appreciate the terrible consequences that ensue where the patient is a husband and father or a wife and mother. Only death itself can bring relief to the distracted

household unless, happily, the mental condition becomes sufficiently abnormal to justify removal to a lunatic asylum.

TREATMENT.

In the treatment of epilepsy it is of course desirable above all things to place the patient under the most favourable conditions for health. He should, if possible, lead an open air life, take a considerable amount of exercise, and engage to some extent in bodily labour, such as gardening. His diet should be simple and contain only a small quantity of butcher's meat. He should have no alcohol and is better without tobacco, but if he has acquired the habit of smoking this need not be absolutely forbidden. His teeth should be examined, and if defective his food should be minced or cut up so as to prevent its being swallowed in lumps. It is not advisable to give epileptics false teeth.

In spite of what has recently been said by an eminent authority, most practitioners will agree that it is impossible to dispense with the use of bromides, and that their introduction has marked a great progress in our power of dealing with this disease. The bromides should be used as often and in such doses as may be needed to check the fits, and in cases where, in spite of all we can do, the fits recur from time to time, the treatment should be kept up, as the patients are worse when it is left off. It is of course true that it is possible to give too much of the remedy, and that we may produce a state of depression by so doing which is undesirable; but no great harm is done, as the drug can be dropped, or its doses diminished, until the symptoms induced by it disappear. It is not fair to attribute to the use of bromides the dementia which is the natural result of the disease. I am sure that a great many cases of epilepsy are cured by the proper use of the bromide salts, and that those cases which are not cured are benefited to a greater degree than by any other remedy. It is better to employ the mixed bromides, a method introduced by Brown-Séquard and followed by Charcot, that is to say, an equal quantity of the bromides of potassium, sodium,

and ammonium, but I always add ten or fifteen minims of tincture of digitalis to each dose of the medicine. A single dose should be given at bedtime, especially if the fits occur only at night or early in the morning, or a dose night and morning, increasing it to three times a day only where the fits are very frequent. We may begin with a dose of thirty grains combined with tincture of digitalis, and this should be increased up to whatever quantity may be needed. Niemeyer tells the following story which bears upon this point: he heard that two cases of inveterate epilepsy which he had for years treated without any benefit had been completely cured by a so-called "specialist" whose advertisements were to be found in the columns of almost every newspaper. He investigated the subject more closely and found that in one patient, whose governess had for years kept an accurate journal and whom he had not lost sight of, the attacks had been absent for several months, and the general health, which had been much impaired was decidedly better. The "specialist" refused the petitions of numerous persons of limited means to modify the high prices of his medicine or to give a prescription for it, so Niemeyer had a bottle of it analysed. The analysis showed that the mixture consisted of a solution of bromide of potash (3jss-3vj) coloured with indigo. Both patients had taken the remedy in considerable doses. At first only two tablespoonfuls were given daily, but after ten days four, after ten days more six tablespoonfuls, after that the dose was increased more slowly, being gradually raised to ten, fifteen, and twenty tablespoonfuls. So that it appeared that in this case, as in most others where secret remedies prove useful, it was not the remedy but the mode of using it that was the secret. He thought it probable that the contradictory assertions current respecting the value of bromide in epilepsy were greatly due to the fact that different observers had not given it with equal perseverance and in the same doses. He determined to imitate the treatment of the "specialist" where practicable and induce other specialists to do the same, and he became convinced that thus used in large doses for a long

time although it may not cure all cases of epilepsy, it will in many cases relieve the attacks for a considerable period, and in some cases will even remove advanced impairment of the mental functions. He goes on to say that neither in his own practice nor in that of others had he seen cases where the intervals between the attacks did not grow longer. Even patients who had previously received no benefit from the bromide of potash began to improve, when the dose was raised to eight or ten tablespoonfuls of the above solution daily.

Niemeyer had the reputation in his day of belonging to a school which numbered in its ranks some of the best physicians who lived in the middle part of the last century. They had broken with the traditions of the past and refused to write the long orthodox prescriptions containing many drugs of whose action they knew little and were therefore styled "sceptics" and were not popular, but they did a great deal for the reform of therapeutics. To this subject Niemeyer made two great practical contributions; he taught us the use of iron in anæmia in the shape of Blaud's pills and how to use bromide of potassium in epilepsy. The lesson need not be lost because no one any longer reads Niemeyer's book and probably it has passed generally into the common stock of knowledge, but there is always a danger of the precious results of clinical experience being upset by specious but false theoretical teachings.

MODERN METHODS OF TREATMENT OF GONORRHŒAL URETHRITIS.*

BY GEORGE HEATON, M.B., B.CH., OXON., F.R.C.S.

HON. SURGEON TO THE BIRMINGHAM GENERAL HOSPITAL.

THE treatment of gonorrhœal urethritis is a subject which is always of interest to medical men: for it is one on which many of us hold decided though sometimes conflicting views, and it relates to a disease which is of great importance, both because of its extreme frequency, and because of the untold misery it is capable of bringing upon its victims, whether they be innocent or guilty.

Then again, it is a subject which is almost endless. Ever since the earliest times, vaunted specifics for the cure of gonorrhœa have periodically, nay almost incessantly, been brought out.

One painstaking authority collected a few years ago no less than several hundred "infallible remedies," all of which have in turn been tried and found wanting. At the present day the only mystery is that the disease has not many years ago been completely stamped out of existence, so numberless are the "never-failing specifics" which are daily being laid before a credulous public by a race of enterprising and advertising chemists.

The object of this paper will be in no wise to emulate their example, and to advocate some new line of treatment which shall never fail; but rather to briefly describe some of our more modern methods of dealing with the disorder, to comment on them, and to mention the success or want of success they have been attended by in my own hands.

First of all, a few words as to the importance of the subject.

* A Paper read before the members of Coventry Medical Service, Dec. 11, 1901.

An impression seems, of late years, to be gaining ground that a urethritis, after the first acute symptoms have subsided, needs little, if any, medical treatment, and is scarcely worth consulting a doctor about. A chronic gleet discharge has, with some men, come to be looked upon as an almost natural condition of things, and certainly of no more moment than a cold in the nose. Whereas we all know that a neglected gleet will almost invariably, sooner or later, lead to a urethral stricture with all its consequent dangers to bladder and kidneys.

Personally I believe that gonorrhœa is responsible for almost as much human misery as is its more dreaded sister syphilis, and that it is quite as capable of carrying disease to the innocent wife and offspring. Many of the various pelvic inflammations in women owe their origin to an uncured gleet in the husband ; while purulent ophthalmia, which is alone responsible for quite 25 per cent. of the blindness in our Children's Blind Asylums, has in most cases its origin in infection from a specific vaginitis of the mother.

Unfortunately, though we, as medical men, are not likely to fall into this error of minimising the importance of a chronic urethritis, yet our best endeavours to effect its cure are often accompanied by but indifferent success. But this, as I shall point out later on, is due to the multifarious origin of a gleet.

In the prognosis and treatment of urethritis, we must always remember that there are at least two quite distinct kinds of acute urethritis, and that in their incipient stages they are apt to be indistinguishable from one another. The one is the true specific inflammation due to an infection of the urethra by the specific organism the gonococcus, an eminently contagious disorder, and one which tends to invade the whole length of the canal and the various glands entering into it by a process of direct spreading infection. To this disease alone should be reserved the term gonorrhœa.

The other and less common form of the disease is a milder inflammation usually limited to the anterior part of the tube, and showing little if any tendency to spread towards the mem-

branous and prostatic parts. This form, which is caused by the common organisms of suppuration, may occasionally follow intercourse with a chaste woman, and is predisposed to by some slight trauma during the act of intercourse. It is, as a rule, of short duration and easily curable by any weak antiseptic injection. A previous urethritis which has left the urethra weak and irritable certainly renders it more vulnerable to such causes of inflammation. Some of one's most gratifying and striking successes, where a complete cure has followed a week or two's treatment, are, I feel sure, cases where the disease in question has been this simple or septic urethritis rather than the true gonorrhœal one. In fact, so indistinguishable are these two forms of urethritis in their earliest stages that it behoves us to exercise extreme caution before we definitely pronounce the disease as a true gonorrhœal inflammation, lest, when intercourse has only taken place between husband and wife, we become by our mistaken diagnosis the means of bringing unfounded accusations against an innocent individual.

True gonorrhœa, on the other hand, due to the specific organism,—the gonococcus, cannot spring as it were from simple uncleanliness, but must be traceable to some other gonorrhœal discharge. We do not know for certain how long gonococci may remain living and virulent in the urethra, or in other words, how long a chronic gleet may continue to be infectious. But a patient with such discharge following a true gonorrhœa should never be given a clean bill of health, and is almost certain, if he marries to infect his wife.

Let me here say a few words about the micro-organism of gonorrhœa, the gonococcus, and its means of detection. It was discovered by Neisser in 1879, and has been proved, by cultivation experiments outside the body and injection, to produce the true disease. It is a large micrococcus (1.25μ) usually occurring in pairs (diplococcus) with their contact surfaces flattened. Each one sometimes shows a longitudinal groove, making the group look like four cocci. They are sometimes found free in

the pus, but usually in the cells themselves, or between the epithelial cells of the urethra. They are extremely difficult to cultivate outside the body, but may be made to grow in human blood serum. They also grow for a short while on agar-agar and blood serum. They may be distinguished from ordinary micro-organisms of suppuration (staphylococci and streptococci) by the fact that they do not stain by Gram's method, all colour being removed.

[Abs: alcohol, Erlirlich-Weigert gentian violet solution.— Wash in alc. then put in iodine 10: Poiass: iod: 20. Water, 3000. Clear in oil of cloves and mount]

The best mode of detecting the organism in pus, is to collect a bead of pus from the urethra between cover-glasses. Dry on as a film. Then stain for a few minutes in concentrated alcoholic solution of eosin, and then for a few seconds in concentrated alcoholic methyl blue, wash in water and mount

It must also be carefully distinguished from certain micrococci which are found existing in pairs occasionally in the normal urethra, described by Lustgarten.

We now pass on to the treatment of an attack of acute urethritis. First of all, a few words on the so-called abortive method of treatment, or of cutting short the disease. It is admittedly only of service in the earliest stage of the disorder, before the ardor urinæ and profuse discharge have commenced, in fact before our diagnosis is in some cases any more than a provisional one. The urethra is first of all rendered insensitive by the injection of a weak cocaine solution. A strong solution of nitrate of silver, grs. xv. or xx. as ʒi, is then injected into the urethra by an ordinary urethral syringe. The injection is followed at once by a profuse purulent discharge, with all the accompanying symptoms of acute urethritis. This is treated by mild anti-septic injections of potass. permanganat or Boracic acid, and in successful cases should be quite well in ten or fourteen days. We must presume that in the acute inflammation so set up, the specific gonorrhœal organism either fails to obtain a foot-hold or is destroyed

The chief drawback to this somewhat severe and heroic treatment is its frequent want of success. The gonorrhœa pursues its course unchecked, and in fact, in many cases, all acute symptoms are accelerated and intensified. There is also some risk of a urethral or peri urethral abscess being set up and (it is said) of stricture.

Quite lately, systematic early irrigation of the urethra has been advocated as a means of cutting short an attack. The anterior portion of the urethra is irrigated by means of a special apparatus, with a suitable nozzle to fit in the urethra with some mild antiseptic lotion, such as potass. permanganat, 1-5000, or protargol, 1-4000. The irrigation, which should be carried out twice daily for three or four days, and then daily for two or three weeks, is at best a tedious method. I have had no experience of it, as I have never yet been able to find a patient willing to submit to such a course of treatment in an early stage of the disease.

With regard to the general management of a case of gonorrhœa, the first essential in the treatment is complete physical and sexual rest. The latter form of rest is of course to guard against all causes of urethral congestion. I do not think sufficient stress is usually laid upon the importance of physical rest. I feel sure that if all patients with acute urethritis could be made to lie in bed, or, at any rate, on a couch for at least a week, we should see fewer such complications as epididymitis, cystitis and the like, and the duration of the disease would be materially shortened. I have frequently noticed in cases where the inflammation has been so acute as to compel the patient to lie up for a few days, how rapidly the discharge afterwards dries up. In any case, a man should always be advised to take as much rest as he possibly can—to lie on a couch for two or three hours every day with the legs and hips raised. All exercise which can possibly be avoided should be forbidden. He should never even walk when it is possible to ride. The worst forms of exercise in all stages of the disorder are horse exercise, rowing, and bicycling, and these should always be strictly forbidden.

Hot hip baths are of great service at the height of the inflammation, and by relaxing the peri-urethral tissues assist materially in relieving pain. Both penis and scrotum require support. A well-fitting suspensory bandage is always a great comfort, while the penis should be supported by a bandage or silk handkerchief passed between the thighs and fastened at the back and in front to an abdominal bandage or belt.

Free exit must be provided for the urethral discharge, and on no account must it be allowed to get dammed up under the prepuce, or in any rubber apparatus. There are several inexpensive and efficient bags with some absorbent material in them now sold for this purpose.

As regards diet, our main object in the early stage, and also while the inflammation is at its height, is to keep our patient on a reasonably low diet, and to render his urine as little irritating as possible to his inflamed urethra. In the acute stages meat and fish should be forbidden, and the patient fed upon milk and farinaceous puddings, with bread and butter. Certain articles of diet must be excluded from the dietary as long as the attack lasts, as they are apt to encourage and keep up the discharge. First among these must be placed alcohol. Alcohol in every form is to be forbidden. I am sure we can all quote many and many a case from our clinical experience, where a single deviation from this strict rule has been the undoing of weeks of careful treatment. I make two rules in respect to alcohol. I never allow any form of alcohol, however dilute, during any stage of the disease, and after apparent cure I never myself, if possible, sanction the return to stimulants without warning the patient that such return may possibly bring back a little discharge.

Salt and spiced foods, curries, condiments, coffee, tea (unless extremely dilute), pickles, made dishes, asparagus, sauces, should all be excluded from the dietary, owing to their action on the urine. Milk and cocoa may be taken freely. Barley water, linseed tea, and similar demulcent drinks are frequently of use when there is much pain and frequency of micturition. The patient's

fluids should not in my opinion be stinted. He should on the contrary be encouraged to drink freely, and so dilute his urine.

Absolute cleanliness is of the utmost importance. The prepuce must be well retracted twice every day, and its inner surface and the glans penis bathed with warm water or boracic lotion. One cannot in this connection be too careful in warning the patient of the infectiousness of his discharge. I have known the disease to spread through an entire family, purely from ignorance of the necessary precautions to be observed in regard to the use of linen and lavatories. Of its terrible effects, if the pus be carried by the patient's fingers to his conjunctivæ, one need scarcely speak here, and a timely word of warning may be the means of averting a partial or complete blindness.

The Internal Medication.—We now pass on to use of drugs internally in gonorrhœa.

When there is no discharge, but only irritation about the urethra and frequency of micturition, and during the time the discharge is increasing in quantity, in other words during the incubative stage and the early part of the acute inflammatory stage, the various oleo-resins, which are so useful in the later stages, should be avoided, as they only do harm. Our treatment should begin with a brisk purge. This, by emptying the rectum and sigmoid is of marked value in subduing the congestion of the prostate and deep urethra. When there is fever and much constitutional disturbance aconite given in small doses with an alkali will be found very useful. In less severe cases I usually give a mixture containing bicarbonate of soda, a little sulphate of magnesia, and some tincture of hyoscyamus with either, infusion of buchu, or liquid extract of kava-kava. The mixture renders the urine less acid and acts as a sedative to the urethral mucous membrane.

Erections of the penis at night when excessive and painful are best treated by making the patient sleep on a hard mattress, giving a small and very early supper, and some device when in bed to prevent his sleeping on his back. As sedatives, chloral, bromides, cannabis indica, camphor, and opium are all useful.

A very efficient suppository is one containing camphor, gr. ij, ext. bellad., gr. j, ext. op., ij, put in the rectum just before going to bed. A urethral injection containing liq. morphinæ, ℥x, and cocaine hydrochlor., gr. $\frac{1}{4}$, is recommended by some authorities, just before the patient goes to bed with the same object.

When the inflammatory stage is beginning to abate and during the whole of the stage of gleet, the various oleo-resins form our sheet anchor, as internal medicines. Ol. santal. flavi, copaiba, cubebs, Canadian turpentine, hydiastis canadensis, and others are the ones most usually employed, and may be given alone or in combination. Sandalwood oil I place first as I have found it most efficacious and least liable to disturb the digestion. But they are all nauseous to the taste, and apt to upset the stomach, and for this reason are generally given in the form of capsules. On the other hand, if they can be tolerated in a mixture, combined with a little liquor potassæ, their power for good is certainly increased.

Cubebs seems to be even more powerful than copaiba as a stimulant to the urethral mucous membrane, and is especially useful in the more chronic cases of gleet. Chevalier's perles which contain equal quantities of ol. santal. flavi., copaiba, and cubebs, seem to owe their efficacy to the cubebs which they contain, and will be found very useful in rebellious cases.

Saw-palmetto, as a dry extract, in doses of two to three grains, or as a fluid extract in one or two dram doses, has a considerable reputation, especially in America, and may be given with any of the other drugs just mentioned, or in capsules.

Methylene-blue has of late been extolled in these cases. I have had no personal experience of it.

The Local Treatment.—During the incubative stage the urethra is best left entirely alone as regards local treatment, if the case is one of undoubted gonorrhœa. When there is still a doubt as to whether the trouble may not be a simple urethritis, limited to the anterior portion of the urethra, I am very fond of ordering an iodoform bougie (iodoform, gr. v., ol. eucalypt., ℥j.

cocaine hydrochlor., gr. $\frac{1}{4}$, ol. theobrom., *q.s.*). Such a bougie passed into the urethra each night for three or four successive nights does certainly seem to quickly cure a simple urethritis.

This is the stage in which the abortive method of the treatment, if it is to be of any avail, must be tried. There are two chief ways of doing this, which I have already alluded to briefly. If a strong astringent is to be applied to the anterior urethra, the best way of doing so is by means of the urethral endoscope, to which I shall call attention presently. My personal experience is limited to two cases. In the one the gonorrhœa, if true gonorrhœa it was, quickly came to an end. In the other, a most acute and alarming inflammation was set up, and the patient ran such a risk of urethral abscess, and convalescence was so prolonged, that I determined never again to repeat the experiment.

The other method—by repeated daily irrigation—cannot strictly be termed an abortive method of treatment, as its introducers advocate that it be kept up for a fortnight or more. To my mind there are two objections to it. Firstly, that such irrigations must be performed by the medical attendant, and to be of value must be repeated once or twice daily, and few patients will be found willing to submit to such treatment. And secondly, there must be considerable risk of carrying the gonorrhœal injection to the deep urethra and bladder.

When the discharge is profuse, some very mild antiseptic mixed with an anodyne is to be used as an injection to wash the pus out of the inflamed canal. Permanganate of potash, 1-5000, or weak boracic lotion with a half or one per cent. of cocaine in it, makes an admirable detergent injection. Perchloride of mercury, however dilute its solution, is apt to cause a good deal of irritation at this stage. Mercurol—a combination of mercury with yeast nuclein—a proprietary preparation, is certainly less irritating when used in solutions of the same strength as the perchloride salt, and may occasionally be tried in its stead.

A most useful injection, and one which can be used both early and late is permanganate of zinc. The late Mr. Berkeley

Hill first brought it to my notice, and I have since trying it used it almost to the exclusion of all others. It must be used in very dilute solutions in the early stages, gr. $\frac{1}{8}$ ad $\frac{3}{4}$, and this strength may be increased as the inflammation subsides and the stage of gleet is entered.

Whatever be the solution employed as an injection at this stage, our object should be the same, namely, to cleanse with a weak antiseptic the anterior portion of the canal. With this object in view, it is important that no undue force should be used in injecting, and that not more than two drachms of fluid be used at each injection, lest the deeper part of the urethra and bladder be infected. Before using the injection the patient should always empty the bladder and thus flush his urethra, and the injection should be allowed to remain in the urethra a minute or two.

When the discharge becomes thinner and less purulent, the ardor urinæ less pronounced, in fact at the commencement of the third stage of the disease, then is the time to begin astringent injections. The local treatment from now onward becomes the most important.

The solutions which have proved of most value in my hands, are the following—

Permanganate of zinc, in strength of $\frac{1}{8}$ gr. ad $\frac{3}{4}$ increased up to gr. $\frac{1}{2}$ ad $\frac{3}{4}$.

Sulphocarbolate of zinc - - - ij-iiij gr. ad $\frac{3}{4}$.

Sulphate of zinc - - - gr. $\frac{1}{2}$ -j gr. ad $\frac{3}{4}$.

Another useful injection is—

Zinci sulphat. - - - gr. $\frac{1}{2}$

Plumbi subacet. - - - gr. j.

Tr. catechu. - - - ℥x.

Aq. - - - $\frac{3}{4}$.

or, a mixture of the three sulphates—

Cupri sulphat. - - - gr. $\frac{1}{4}$

Zinci sulphat. - - - gr. $\frac{1}{2}$ ad $\frac{3}{4}$.

Ferri sulphat. - - - gr. j.

In the more obstinate cases we may have recourse to dilute

solutions of nitrate of silver, beginning with gr. $\frac{1}{4}$ and cautiously increasing the strength.

Several preparations of silver, such as argentamine, argonin, protargol, have of late years been put forward as substitutes for silver nitrate.

Argonin is a compound of nitrate of silver and casein soda, forming a soluble powder. It may be used in solutions of one to ten per cent. as an injection. In the few cases where I have tried it, I have found it less irritating than nitrate of silver, but scarcely so effective.

Protargol is a proteid compound of silver, containing about eight per cent. of silver. It is certainly very valuable as an injection when used in about a one per cent. solution, increased gradually to four per cent.

In one of the above ways we may in the large majority of cases effect a cure in about five or six weeks, provided that our patients will patiently and conscientiously carry out our instructions. A complete and perfect cure is in my experience but seldom effected in a shorter period than this, at any rate in a first attack.

But unfortunately there remains a small percentage of cases which resist all our efforts, and where a discharge persists in spite of all our treatment. Many, again, of our patients only consult us when matters have already reached the chronic stage, or it may be after months or years of such gleety discharge. The cure of these cases will sometimes baffle our utmost skill and endeavour; the patients wander from one practitioner to another, or fall into the hands of some unscrupulous quack, and, sooner or later develop urethral strictures or some other urethral complication.

We shall best succeed in our treatment of these most troublesome cases, if we bear in mind the more common causes of such discharges, and then try and diagnose which condition is present in the one under treatment. Such a gleety discharge may owe its origin to—

1. A chronic unhealthy inflammation of the mucous membrane

of the whole length of the urethra, but particularly of its deeper portions, the membranous and prostatic portions.

2. Some slight stricture with ulceration of the membrane behind it.

3. So-called granular patches in the urethra.

4. Inflammation, or abscess in the lacunæ or follicles entering into the urethra.

5. Chronic inflammation of the prostate or its ducts.

A large sized cold metal bougie should first of all be passed if the ordinary astringent injections have been given a fair trial and have failed. This at once detects any narrowing of the urethra when present; gives us evidence of any specially tender point, while its occasional passage seems to have a beneficial influence in some cases on the urethral mucous membrane and assists in its cure.

The urethral endoscope should then be given a trial. By its means we can diagnose and locally treat the cause of the gleet if it exist in any part of the urethra anterior to the bulb, and in some cases as far as the membranous urethra. The use of the instrument is in my opinion one of the greatest advances made in recent years in genito-urinary surgery. (A demonstration was here given of the Urethral Endoscope and its method of employment.)

Any locally inflamed, or granular patch can by its means be treated by direct application. The most useful of these is a strong solution of nitrate of silver, gr. xv-xxx ad ʒj, or protargol in strength of from 5 to 20 per cent.

Such applications should be made two or three times a week, and a mild astringent injection given between the applications. One can thus effect a cure in some of the most troublesome cases of chronic gleet.

When that portion of the urethra, which we can examine with the endoscope, shows no obvious lesion sufficient to account for the continued discharge we may fairly conclude that the mischief lies deeper, either in the membranous or prostatic portions, or in the ducts or lacunæ leading into them. The

ordinary astringent injections made by means of urethral syringes are here of no use, for they can be rarely if ever be made to pass beyond the bulb of the urethra, owing to the action of the compressor urethræ muscle.

We have then to fall back upon other methods of applying our drugs locally, and have a choice of several. Each one of which may be tried in turn.

Firstly.—The occasional passage of a cold metal bougie seems in some cases to effect a cure by setting up a more healthy action.

Secondly.—I have frequently found in these cases that the daily use of medicated urethral bougies made so that the active drug is applied to the deeper portion of the urethra, is followed by excellent results. Messrs. Thos. Christy of London, make an excellent form of urethral bougie called an antrophore, in which the active drug is fixed on the end of some flexible metal bougie. They form an admirable means of applying drugs locally and can be used by the patient himself.

A third method is the instillation of a few drops of some strong astringent by means of a special deep urethral syringe. Guyon's is perhaps the best form of such syringe. By its means a few minims of a solution of nitrate of silver, gr. xx or xxx, ad ʒj, or of protargol, five to twenty per cent. may be injected in the inflamed urethra. This form of treatment is apt to be followed by a good deal of pain and tenesmus, and must be employed with due caution at first.

Another method which is highly spoken of, is a daily irrigation of the urethra with a large quantity of some mild astringent fluid.

The *modus operandi* is as follows: the patient is lying down with a large receiver between his legs. An irrigating apparatus is filled with two pints of the solution, and a glass urethral nozzle fixed on the end of the tube. After irrigating the meatus and the anterior portion of the urethra and allowing the fluid to escape through the meatus, the irrigator is raised, the pressure thus increased, and by compressing the external meatus the

fluid is forced along the urethra into the bladder. When this is full the patient is instructed to pass water, and thus again irrigate his urethra.

Various solutions may be tried, but whatever drug be employed it should be used in very dilute solution. It is apparently the volume of fluid which is used, which is the active agent, rather than its exact quality.

Potassium permanganate 1-5000, boracic acid gr. xx ad Oj, or protargol 1-400, gradually increased to 1-200-

To be of use the treatment must be carried out daily, and the medical attendant himself must at any rate superintend it. The time involved in its performance and its irksomeness, make it difficult to persuade patients to submit to it, but in suitable cases it is often followed by the best results.

When a gleet is due to a chronic inflammation of the prostate gland and its ducts, it will sometimes defy all our efforts to cure it. In such cases American surgeons have advised daily massage of the prostate per rectum, with a view of getting rid of the inflammatory products in it. It is, however, a proceeding so disagreeable to both practitioner and patient that I doubt if it will ever be adopted in this country and I have no experience of it.

I am accustomed in these cases, in addition to the remedies I have already alluded to, to give the patients every night a rectal suppository of ext. bellad. gr. i-ij, ichthyol gr. ij, in a basis of glyco-gelatine. These act in much the same way as vaginal suppositories of glycerine and ichthyol in cervical catarrh, and I believe that as they lie in the rectum, close against the prostate, do exert an influence on that gland.

I have now briefly enumerated the most important of our more modern methods of treating this most rebellious of disorders, a chronic specific urethritis. I feel confident that in these chronic cases our treatment, if it is to be a successful one, must be chiefly a local one, and that in this as in other disorders, a correct diagnosis of the exact lesion which is keeping

up the discharge should be our first and great aim. It is no use slavishly continuing with various anterior urethral injections, which do not even enter the deeper parts of the urethra, in cases where the lesion lies in the membranous or prostatic portions of the canal. And medicaments in proper strength, if only applied directly to the actually inflamed or ulcerated spots, will sometimes quietly succeed, where months or years of an empirical mode of treatment by injections has failed.

I do not for a moment maintain, or even hope, that in these methods we have a panacea for all cases of gleet. A small percentage of cases will defy all our efforts, and the efforts in all probability of our brother practitioners—for these patients are notorious wanderers from one medical man to another in search of cure. But, at any rate, by adopting some such rational line of treatment, we shall greatly lessen the number of such cases, and so help to remove what has hitherto been an opprobrium of our art.

THE NORDRACH METHOD OF TREATING CONSUMPTION, AND SOME OF ITS RESULTS.

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It may be thought by the readers of this Review that too much has already been written and read of the Nordrach method of treating consumption, and the results thereby obtained. They may possibly think that every doctor nowadays understands the open-air method of treating consumption, and knows all about it.

To a certain extent no doubt this is true. Nearly every doctor nowadays, except the most benighted and old-fashioned, does know that consumptives require plenty of fresh-air, and plenty of nourishing food. Nevertheless, fresh-air and food given with an unsparing hand, and without discretion, do not make up the sum of the Nordrach treatment. Other details of a simple but definite kind are equally important in the ingredients which go to make up the successful results obtained by this method.

I am inclined to think that these details are not as yet sufficiently appreciated by those medical men who have not had the opportunity of making a stay at Nordrach itself, or of watching the working of this method at one of the British Sanatoria carried out on the same lines.

A stay of six months at Nordrach, for my health, and a further eighteen months' experience of carrying out the treatment on others in an Irish Sanatorium, has given me a considerable opportunity of appreciating the Nordrach method at its true worth, and forming an opinion both from observations on myself and observations on others. I have, therefore, thought it might be interesting to readers of this Review to discuss in detail the Nordrach method of treatment, to give them some

idea of what Nordrach is like itself, and to end by giving very briefly a few examples of the results obtained by this method in the uncertain and inclement climate of Ireland.

The Nordrach method of treatment consists of three simple things:—

1. Abundance of fresh air at all times and in all weathers.
2. Superabundance of food.
3. Rest and exercise graduated according to the state of the body temperature.

As the last point is one of the most important, and the least understood, I will venture to discuss it first.

With very rare exceptions, no exercise at all is allowed in the Nordrach method unless the body temperature is within normal limits, and has remained so for at least a week. Furthermore, the temperatures are all taken in the rectum regularly four times a day. On waking in the morning, about 7 a.m., at 12 noon, at 6 p.m., and after getting into bed at night about 9.30.

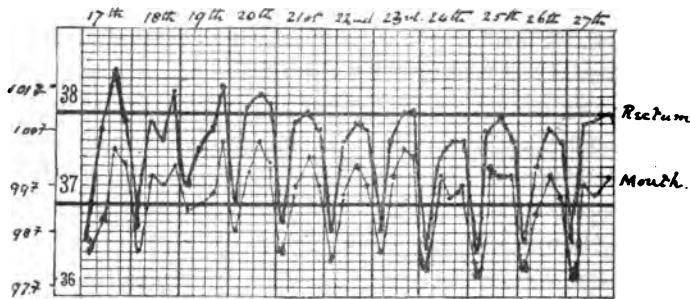
As is well known, rectal temperatures may vary in health between 98.6 or below in the morning up to 100.4 after exercise, or occasionally in the evening after meals. The temperatures are taken in the rectum because rectal temperatures give a much nearer approximation to the real temperatures of the blood than can be obtained in any other way, and in a prolonged and insidious disease like consumption it is most important to know the smallest variations above the normal.

A great many objections have been offered to taking the temperatures in the rectum. People have said that it is undignified,—that it is unnecessary,—that English people would not put up with it, etc. As a matter of fact, however, English people put up with it with perfect equanimity. There is nothing undignified about taking the temperature in the rectum in private, and I need hardly say that it is not customary to take rectal temperatures in any sanatorium in public.

It has been urged that it is unnecessary because the mouth temperature gives a sufficiently true indication of the range of pyrexia, and that even if it were best to know the rectal temperature,

a few days' simultaneous observation of both would show the definite ratio of difference between the two, and then it would be sufficient to take the mouth temperature. This, however, is not the case. There is no definite ratio of difference between rectal and mouth temperature.

For nearly three months I took rectal and mouth temperatures on myself simultaneously, and subjoin a small portion of the chart.



It will be seen that the ratio of difference is an extremely variable one. The first thing in the morning, when the mouth has been shut for many hours during sleep, the rectal and mouth temperature, as a rule, approximate pretty closely to each other, while at other times of day there may be as much as a degree, a degree and a half, or sometimes even two degrees between them. Sometimes, too, it will be observed that the mouth temperature goes down while the rectal temperature goes up.

I think there can be no doubt that the rectal temperature is far the most satisfactory one to record, and as a matter of fact when one has to take one's temperature four times a day for perhaps six months or more it is far less irksome to take it in the rectum than the mouth. The temperature record to which most importance is attached is the one obtained before rising in the morning. In the quiescent and obsolescing stages of pulmonary tuberculosis this is not only as low as 98.4, but generally very considerably lower, as is shown in the latter part of the above chart. If the morning temperature remains persistently at 98.8 or 99° or more, it nearly always means that the tubercular disease is

not quiescent, even though the temperature during the rest of the day may not rise above the normal limits above mentioned. Complete rest is then necessary. The chief exceptions to this rule seem to be in women, who often have slight elevations of temperature due to their periods, and also in certain patients of neurotic tendencies, who seem to be quite capable of raising their temperature from two to six-tenths of a degree above normal by lying in bed and worrying themselves over what it is going to be.

The temperature being shown by observation to be within normal limits, the patient is allowed first to leave his bed for a couch, and then to commence to take exercise broken by stated periods of rest. No form of exercise is allowed but slow walking, at not more than about two miles an hour, with frequent stoppages to sit down and rest. As Nordrach is at the bottom of a deep and narrow valley, all the walks are up hill to start with and the patients come home down hill. This situation was not chosen by chance, but on purpose. It is considered that slow hill climbing up graduated paths is a very valuable exercise for consumptives, as it strengthens the muscles of the heart, the muscles generally, and expands the healthy portions of the lungs. Moreover, it is best that the sanatorium should not be at the top of the hill, but either at the bottom or on its sides. It is well that the patients should have the fatigue of the hill climbing not at the end of the walk when they are tired, but at the beginning of the walk when they are fresh.

The length of the walk is exactly regulated by the physician to fixed and definite distances, according to the strength and capacity of the patient; the point being that the patient should get sufficient exercise stopping short of fatigue, and that the temperature after exercise should not be raised above 100.4° F.

The chief walk is taken in the morning, and the patients all lie down on couches in their rooms for an hour before the chief meal of the day at one. In the afternoon a short walk is taken, and the patients again lie down before the evening meal at seven. They all go to bed at nine, and get up about seven.

So that even for a robust patient there is much rest, from nine to ten hours in bed, two hours more on their couches, and much sitting about during their walks

The walks vary from a few yards to several miles, six or seven miles being generally the longest walk apportioned. As I have already said, no other form of exercise but slow walking is indulged in. The dancing, tennis-playing and other forms of violent exercise, which are allowed at some sanatoria are most pernicious. During such forms of exercise strong respiratory efforts are made; freshly formed scar tissue is broken down, and tubercle bacilli, which had been shut off by adhesions from the general lung tissue, are again set free and disseminated into hitherto healthy parts of the lungs. The evil effects may possibly be seen at once in a rise of temperature and fresh outburst of cough, etc. Very often, however, the symptoms are delayed for one, two, or even three weeks, until the freshly scattered tubercle bacilli have gained sufficient hold to give rise to constitutional symptoms.

In cases of consumption, the effect of exercise on the body temperature can only be properly estimated by taking systematic rectal temperatures. If doctors would only do this in their cases of early phthisis, they would soon see for themselves the evil results of rapid and violent exercise. Amongst the upper classes, at any rate, I am strongly inclined to think that injudicious exercise, when the patient is entirely unfit for it, has probably more to do with the advance of the disease than any other factor.

In the 83rd volume of *The Medico-Chirurgical Society's Transactions* in the discussion on the Open-Air Treatment of Consumption, a well-known physician talking about early cases of consumption makes the following statement:—"These cases need something more invigorating than walking up to the top of an incline and down again. They will improve in health if they are allowed to join in such games and exercises as cricket, fives, golf, skating, rowing, bicycle riding, and so on, provided the forms of these games are properly regulated to the patho-

logical, physical and social conditions and surroundings of the patients." I do not think it would be possible to give more pernicious advice to a case of early phthisis, but the reason of its being given is not far to seek, for almost immediately afterwards the same writer goes on to say—"frequent taking of temperatures in such cases is irksome to the patient and needless."

Varied and beautiful country walks give a very pleasant diversity of exercise even if they are not exciting, as they most certainly ought not to be. It is only a special pleader who will describe them as walking up and down an incline.

To pass on to the other two points in the Nordrach method, the fresh air and the food.

The constant fresh air is obtained in a perfectly simple manner by having the bedroom windows wide open day and night and also the windows of the dining room. Very few of the bedrooms have balconies and there are no Liege-Halle. The air is obtained in the patient's own bedroom, in the dining room at meals, and during the walks and strolls in the forest. In Dr. Walther's opinion it is best that the patients should lie down quietly in their own rooms and not, when they are resting, be congregated into Liege-Halle. When they are ill enough too to be entirely in bed he finds it best that they should be altogether secluded in their own rooms, where with properly constructed windows, they can get a complete sufficiency of fresh air.

No inclemency of weather is allowed to interfere with the windows being wide open or with the walks, which are taken in snow, rain and fog, as well as in sunshine and dry weather. Patients sit out for hours in the wet and take no harm from it except rheumatism occasionally. They never seem to catch cold except when some new-comer brings an infectious cold with him. They appear to become like the cows and sheep, who can lie out in the meadows in all weathers with impunity.

As regards the superabundance of food this is obtained at Nordrach in three large meals only and not in the frequent small meals, which is the method so many sanatoria adopt. The

first meal, breakfast, is at about eight and consists of tea or coffee and in many cases half a-litre of milk, large quantities of bread and butter (three very large pats are supposed to be taken) and cold meat or pounded raw meat. Dinner is at one, and consists of three courses. The first is either fish or meat, the second meat of either animal or bird, the third fruit with biscuits, or cream ices, or puddings of various kinds, accompanied by coffee. With the first two courses are served sauces and gravies containing large quantities of butter and liberal supplies of potatoes and other vegetables. In many cases another quarter or half litre of milk is taken.

Supper is at seven, and consists of two courses, the first of some hot meat with potatoes, the second usually of some cold meat or raw ham or salt beef or cheese, accompanied by large quantities of bread and butter: occasionally a thick soup or pancakes are given instead of the second meat course. Tea is allowed at this meal and in many cases another quarter or half litre of milk. At breakfast the patients are allowed to help themselves, but at dinner and supper, with the exception of the vegetables and bread and butter, the doctor helps them with his own hands and they are obliged to finish the helps on penalty of dismissal from the sanatorium.

As regards the amount of food given per head a day at Nordrach, I am unable to make any definite statement. At the discussion at the Medico-Chirurgical Society above referred to Dr. Kingston-Fowler says, "the quantity of food, solids and liquids, prescribed to and eaten by each patient daily varies from 2 lbs. 9 oz. to 5 lbs. 5 oz., of this quantity 1 lb. 5 oz. to 1 lb. 8 oz. are solids."

In managing a sanatorium myself I allowed 4 oz. of butter a head a day, 3 pints of milk, and 2 lbs. of uncooked meat, including bone and fat, or an equivalent in fish, poultry, or game, and bread, potatoes, and other vegetables *ad libitum*.

It must not, however, be supposed that all the patients are given the same amounts of food. The amount should be varied according to their weights and general physique, and, to a certain

extent, according to their digestive powers. The object of the treatment is not to make the patients enormously fat, but to give them a fair amount of fat as a reserve to fall back upon, and to make them thoroughly robust and muscular. It is impossible to give any table of weights that should be attained according to the patients' heights. The proper weight depends not only on his height, but also on his breadth and depth, his general physique. This estimation of the suitable weight must depend on the judgment of the physician. As it is approached the milk is diminished, and then left off altogether, and then the butter and potatoes are diminished. It is a great mistake to suppose that the patient should be made enormously fat. He should be made moderately fat and muscular. That, I think, is one of the great merits of the Nordrach treatment. Owing to the graduated and increasing exercise in hilly country, the muscles of the patients become firm and solid, and the fat is, as a rule, only deposited in moderate amounts. On the other hand, in the Liege-Halle, or rest-cure method of treatment, patients are apt to become enormously fat, breathless, and quite unfit for any exertion. I lay some stress upon this point, because I think it is one that has not been properly appreciated by many practitioners.

One must remember, too, that in this very ample dietary, although a gain in weight is a good sign, yet it by no means by itself shows that all is going well. With this dietary patients often gain weight rapidly who are not improving at all, or even going down hill.

As regards the actual articles of dietary used at Nordrach, I do not think they are by any means all wisely chosen or at all digestible. I suppose the food is the sort which delights the German palate, but blood and garlic sausages, raw ham, smoked raw beef, raw sprats smoked, raw salmon, stewed eels, and raw goose, are not calculated to tempt the appetites of English consumptives. Neither can I think that enormous helps of cheese are suited to delicate digestions. Perhaps more might be said for glutinous masses of pounded-up raw meat with raw

eggs broken over it, but there are few patients who will relish such a dish when set before them at breakfast. Speaking for myself, though the Nordrach treatment cured me, it cured me with a great deal of digestive discomfort. With a more reasonable dietary I have found no difficulty in maintaining my weight with no discomfort at all.

In making this criticism, I do not wish it to be thought that consumptive patients should be humoured over their food and allowed to be fanciful. To do so is, I believe, a fatal mistake, and only ends in the patient eating next to nothing. It seems to me essential that the patient should be made to understand that he must eat and finish up without question what is set before him.

The diet, however, should be chosen not only with regard to its nutritive, but its digestive qualities, and should be modified in cases of great digestive disorder. At Nordrach, if the food does not suit you, you've got to suit the food. All are given it alike; neither pyrexia nor anorexia, neither vomiting nor diarrhoea, are allowed to stand in the way. No doubt this is in the main right, and is the only way of breaking through the vicious circle of anorexia, dyspepsia, progressive emaciation and weakness. These symptoms gradually disappear with increased nutrition, and it is astonishing how much food is absorbed even when the patient vomits once or twice every day. I had a patient who vomited once and generally twice nearly every day for months, and yet during that time he went up in weight from 10 st. 7 lb. to 12 st. 11½ lb., and finally got rid of his digestive disorders.

The food is given in three big meals instead of frequent small ones, in order that the digestive organs may have prolonged periods of rest between the meals, and each meal is taken after a period of not only digestive but bodily rest also. Breakfast is of course taken after the night's rest, and before dinner and supper the patients lie down for an hour in their rooms.

I have now, I think, described sufficiently fully the Nordrach method of treatment. Before concluding this paper with a few

examples of the kind of results obtained by it, its successes and its limitations, it may be of interest to describe Nordrach itself briefly, and a typical day in the life of the patients there. In doing so, I shall avail myself freely of an article I wrote on the same subject for the *St. Thomas's Hospital Gazette* in 1900.

The Nordrach Sanatorium, or rather the collection of houses which forms the Sanatorium, is situated at the extreme end of a deep and narrow valley in the Baden Black Forest. Geographically the Black Forest may be considered to be divided into two parts by the Kinzig-Thal, through which the Black Forest railway line runs from Offenburg to Constance. The Nordrach Thal is a valley about eight miles long, running into the Kinzig-Thal on its northern side. The course of the valley is very nearly directly from north to south; it is narrow and winding, and surrounded by lofty pine-covered hills. The upper part of the valley, where the sanatorium is situated, is a little over 1,400 feet above sea level. The surrounding hills rise to nearly 3,000 feet. The geological formation is a species of sandstone, very porous, so that the ground dries up readily after rain. The country is richly wooded, and well watered by a number of mountain brooks. The nearest village is Nordrach, about three and a half miles distant, but there are numerous scattered cottages all through the valley.

It is well to lay some stress upon the situation of the sanatorium, because after much care and search it was chosen by its founder and conductor, Dr. Walther, as a spot that well fulfilled his ideals. In his opinion a sanatorium for consumptives should be far from a town, where there is freedom from wind and dust, where the air is pure and quiet, where the soil is fairly dry, where there is a fair amount of sunshine, and where there are hills for the patients to climb. These conditions are on the whole well fulfilled at Nordrach. In winter, however, owing to the depth and narrowness of the valley, the sun rises late and sets early, and there is somewhat of a deficiency of sunshine; but owing to the course of the valley there is more sun than one would expect. High winds are rare but occasional

visitants. The climate has nothing peculiar about it, like that of Davos and other high mountain resorts, nor is it particularly equable. It is much like the English climate, but tends more to extremes of heat and cold. At the point where the sanatorium is situated the valley opens out a little: there are one or two green mountain meadows and a rushing mountain stream, and the six houses, in which the patients live or eat, are dotted about at the bottom of the valley, or on the side of the hill. Four of these houses are merely old dwelling houses slightly altered for the use of patients. The rooms have mostly two or three windows, but a few have only one. They face all ways and therefore some of them get very little sun.

The only house which has been especially built for patients faces S.S.E., and is about fifty feet up the hill. It is a long narrow building of two storeys, the lower part of stone, the upper part of wood. All the bedrooms face the front and open into a long corridor facing the back.

A typical room is as follows:—It is about $14 \times 14 \times 12$ feet in size. The floors, ceilings, and walls consist of pine wood. There are two or sometimes three windows of moderate size, opening lengthwise like French windows, but not reaching to the ground. Above each window is a fan-light, opening inwards. The furniture consists of a bed, a commode, a table, a wardrobe, a couch, one or two chairs, a douche with hot and cold water, a wash-hand stand with hot and cold water and two basins, one to be exclusively used for washing the teeth, light curtains to the windows, a coil of hot water pipes, two mats, and a spit-cup. The sheets are not linen, but made of a material which looks very much like Jaeger sheeting, but which is, I believe, cotton. The corridor into which the rooms open is plentifully supplied with windows, which are, as a rule, opposite the doors of the rooms: a thorough through draught can thus be obtained if wanted. There are no sitting-rooms in any of the houses in which patients sleep. The only sitting-room is the dining-room, which is some way from the other houses, and built on to an old inn,

which contains the kitchen and servants' offices. The dining-room is a long narrow barn-like room, with very large windows down both sides, which are taken out in the summer ; at one end a portion of the room is raised like a stage, and has on it a piano and a few sofas and chairs. This is the only drawing-room and indoor meeting place the patients have. There are no Liege-Halle. Two somewhat dilapidated sheds, dotted about the garden, one of which contains some decayed deck chairs, are their sole representatives. Leading up into the woods are numbers of winding paths, plentifully sprinkled with benches, each christened with a special name, and further afield in the forest are endless wood tracks for the patients to wander along. The patients are mostly sent varying distances in the same direction, so that they have plenty of opportunities for social intercourse in their walks.

The daily life of a fairly healthy patient at Nordrach depends upon the principles of treatment I have already gone into, and is as follows :—He or she gets up about seven, and is paid a flying visit by the doctor at a quarter to eight, who looks at the temperature chart, and apportions the morning walk accordingly. He then steps down to the dining-room for breakfast. At 8.30 all the eatables are cleared away, and in winter the windows, which have been shut to keep the room warm, are flung violently open, and so by want of food, or cold, dilatory or late patients are driven forth on their walk in good time. No matter what the weather, frost or snow, or rain, or fog, out the patients stay in the woods until about 11.45, when they return to their bedrooms, take their temperatures, and lie down on their couches until dinner time at one. Before dinner the doctor pays them another flying visit and tells them what they are to do in the afternoon. Dinner, after a prolonged struggle, especially on pudding days, ends somewhere between half-past two and three. Then, after sitting about in the garden for a bit the patients drift out on their afternoon walk. This is much shorter than the morning walk so that the time is spent more in sitting than in walking, and in hot summer weather many of the patients take up hammocks

into the woods and lie in them. At any time between four-thirty and six the patients drift back again to their rooms, take their temperatures and rest till they go down to supper at seven. Before seven the doctor pays them another brief visit. Supper is finished about eight and then the day's duties are at an end. If it is summer most of the patients then sit about in the garden for a while and those, who wish to, smoke. Those musically inclined, and who have permission from the doctor, retire to the piano to play or sing. Finally, at nine, everybody goes to bed.

It is thus that a day is spent at Nordrach, and each day is practically a repetition of the other. The patients are weighed once a week, and their chests are examined once a month.

It may sound very monotonous but with pleasant companions and in pleasant weather the time passes happily enough. On the other hand, in the extreme cold of winter, and in time of rain and snow there is naturally a good deal to put up with and the meals are often a severe trial.

Compared to the gaieties of Davos the life is extremely peaceful and monotonous, but this peace and monotony are an essential part of the treatment. The pyrexial patients lead a still more monotonous life, confined to their beds, and, as a rule, seeing nobody but the doctor and the servants; for at Nordrach, and this I think is a great mistake, there are no nurses. Their time is spent in reading, writing, sleeping, and struggling with their meals.

In conclusion I should like briefly to say a few words about the kind of results obtained by this method. Apart from the experience I gained at Nordrach in my own person, and as a looker on I, myself, for a year and a half, managed the Rosslare sanatorium in the north west of Ireland, and while there I carried out the treatment on the Nordrach lines: the only alteration being that I tried to give more digestible food, modified not in amount but in kind for cases of severe digestive disorder; that I perhaps gave rather more medicine than at Nordrach, that the patients had the benefit of trained nurses,

and that in very stormy weather I did not send them for walks but kept them under shelter.

The treatment was carried out in a large roomy house, not specially built for the purpose, and with rooms facing in all directions as at Nordrach. To give any table of results would serve no useful purpose. Cure, or rather arrest, depends not only on the treatment but on the stage at which the patient comes and the length of time which he stays.

As far as I can judge the results obtained in the wet and windy climate of Ireland were not inferior to those obtained at Nordrach, and during an extremely wet and stormy winter the patients made progress as satisfactorily as in the summer. Indeed I really believe a good climate is not nearly so important a matter as has been supposed, nor sunshine. Of course if you can have abundance of sunshine and a delicious climate so much the pleasanter, but there is no need to compass sea and land to get them. The important factor is pure air in abundance night and day, whether moisture laden or not. That is to say I believe patients living in the country might be perfectly well treated in their own homes as far as the climate goes.

I am now treating a few Northampton patients by the same method in the Northampton General Infirmary, and though they have only been under treatment as yet a short time, they are making very encouraging progress in the air of their own place.

The first three cases I mention, I have already recorded at greater length in the *Dublin Journal of Medical Science* for 1901.

Case 1.—Young lady, aged 18; ill 6 months; weight, 10 st. $\frac{3}{4}$ lb. Flabby and anæmic, but not thin; fair amount of cough; expectoration not great in amount, but laden with tubercle bacilli; temperature oscillating between 99° in the morning and 100° at night. Extensive early infiltration of nearly the whole of the lower lobe of the left lung.

Patient made uninterrupted progress and lost her fever entirely in ten days. She was under treatment five months. When she left her weight was 11 st. 13 lbs. She was quite

hardy and robust, walking four or five miles a day in all weathers; practically no cough or expectoration; no signs in lungs beyond little irregular air entry at apex of left lower lobe. Since then, for more than a year, she has been perfectly well, and is regarded by her medical attendants as cured.

Case 2.—A young lady, aged 22; ill 7 months; family history of phthisis; weight, 8 st. 4 lbs. Pale and very thin for her height, which was about 5 ft. 9 in. Extensive tubercular peritonitis, which had been recently operated on; chronic fibrosis with probably a small cavity at apex of left upper lobe, and early infiltration of apex of left lower lobe. Fairly abundant expectoration, containing numerous tubercle bacilli; hardly any pyrexia.

Patient only remained under treatment for a little under three months. When she left she weighed 10 st. 8½ lbs. She was quite hardy and robust, and able to walk four or five miles a day in all weathers. The disease in her abdomen and lungs appeared quite quiescent, but she was still expectorating tubercle bacilli. Since then, for nearly a year and a half, she has remained strong and robust, and has married (not by my advice).

Case 3.—A very nervous hypochondriacal man, aged 46; ill 21 months; weight, 9 st. 6 lbs.; height, 5 ft. 9½ in. Looks wretchedly ill; sputum considerable in amount and laden with tubercle bacilli. Temperature varying between 99.6° and 101°. Cavity at apex of left lung of fair size, with some slight infiltration round it. Very extensive superficial tubercular ulceration of larynx, the true and false vocal chords being almost entirely destroyed, and the inter-arytenoid region ulcerated.

Larynx treated locally with lactic acid.

Patient remained under treatment not quite five months. When he left he was quite robust and able to walk four or five miles a day in all weathers. The ulceration in his larynx was completely healed, and the disease in his lungs quiescent, though the cavity was of course still present.

His after history is however a warning. He insisted on going back to work in an office in the city, where he was shut up in a close room with a number of men the greater part of the day. The result of this was that his health broke down again, and that he died nine months after leaving the sanatorium.

Case 4.—A married woman, aged 35; fairly strong family history of consumption; weight, 8 st. $13\frac{1}{4}$ lbs.; night sweats; coloured sputum with a fair number of tubercle bacilli; temperature irregular, sometimes reaching to 101° or 103° . Early infiltration of upper part of right upper lobe of lung with marked constitutional symptoms.

This patient was only able to stay under treatment two months, but being a woman of great determination, she continued the treatment at home. She is now, year and a half afterwards, apparently quite well. When I last examined her she had no signs in the lungs and no cough. She has now developed an extraordinary tendency to adiposity, and now weighs about 14 stone, despite dieting herself to get thinner.

Case 5, and the last I shall describe. I mention as an example of how much good one may do to apparently almost hopeless cases.—A man, aged 45; ill between two and three years; weight, 10 stone 7 lbs.; height, a little over 6 feet; much cough and expectoration, laden with tubercle bacilli; temperature irregular, oscillating between 99° and more in the morning, and 102° at night.

The whole of the left lung infiltrated and in the greater part consolidated; the upper part of the right upper lobe infiltrated and the apex of the right lower lobe.

Great digestive disturbance, patient vomiting once or twice nearly every day. Patient remained under treatment six months; the left lung rapidly broke down and two large cavities formed in the upper and lower lobes, but the disease did not spread in the right lung. There was much irregular pyrexia from time to time and constant vomiting. When he left, his weight was 12 stone $11\frac{1}{2}$ lbs.; his vomiting has since left him; the disease in his lungs has not spread, but according to his

doctor's report dried up to a considerable extent, and for the last nine months he has been out and about, enjoying a very fair measure of health. No doubt he will die of the disease eventually, but, considering the condition, the amelioration of his symptoms is very remarkable.

These five cases illustrate pretty well the kind of cases one is called upon to treat. Two of them were cases of moderate severity, without complication; one of great severity without complications and two had severally the serious complications of tubercular peritonitis and tubercular laryngitis.

I might mention several other successful cases, but it must not be supposed that the treatment is always crowned with success. The results, indeed, are rarely of that almost miraculous character which the writings of some intemperate people might lead one to expect. Occasionally they are very disappointing, and a case, even though a tolerably early one, will continue to progress down hill with only a very slight retardation of the rapidity of its course. This not infrequently happens in cases with a strong family history of consumption, and despite all that has been said to the contrary of late I am perfectly certain from my own personal observation that the presence or absence of a strong family history is an enormously important element in prognosis. Apart from family history, the cases that I have found do badly are those with a tendency to persistent diarrhoea, and those in which the larynx is infected in an oedematous form, especially if the epiglottis is swollen and ulcerated.

But taking the bad with the good, the results obtained by this method of treating consumption are surprisingly satisfactory, far better, I believe, than by any other method. Whatever drugs are discovered in the future, I believe it will always form a part of the rational treatment of consumption, and it has the inestimable advantage of being perfectly feasible in our own indifferent climate. Moreover, it has the great excellency of rendering patients who have undergone it far more hardy than they ever were in their lives before.

The great difficulty is with the after treatment. Even with

the most satisfactory cases the same kind of life should be continued, as far as possible, for about two years after the cessation of all symptoms. With the poor this is almost an insuperable difficulty. It is to be hoped not only that numerous pulmonary sanatoria will arise throughout the length and breadth of England, but that also it may be possible to establish colonies for convalescents somewhat after the nature of epileptic colonies, where they may be able to do suitable work under suitable surroundings.

SURGICAL ABSTRACTS.

BY LEONARD GAMGEE, F.R.C.S. ENG.,

The Treatment of Tubercular Glandular Affections. (Proceedings of the French Congress of Surgery. *Revue de Chirurgie*, November, 1901.)

This was one of the main subjects for discussion, and was introduced by Broca, who in the first place dwelt upon the importance of good food and of sea-air. He recognises three means of local treatment :—

1. By the use of interstitial injections, of which he considers that two only are of use, namely, iodoformised ether and camphorated naphthol, and of these he prefers the former. This treatment by injection seems a favourite one with French surgeons. Berger, for instance, advocates its use in the case of suppurating tubercular cervical glands. He repeats the injection three or four times; and if, during the treatment, the skin inflames, he punctures with a tenotome, introduces a small curette through the puncture and gently scrapes. After expulsion of the contents, he washes out with sterilised saline solution and then injects with iodoformised ether. But there are objections to treatment by injection, as instanced by Reynier,

who has more than once seen sloughing of the skin caused. Péraire brought forward another objection to this form of treatment, namely, that the periadenitis caused by it renders subsequent enucleation, which may be necessary, most difficult.

2. *Extirpation.* While considering that injection is the treatment for choice, when pockets of pus are present; yet if there are many glands involved, more especially if there are fistulæ and caseous foci present, Broca prefers extirpation. In doing this, he first exposes the great vessels and nerves, as a clear view of them prevents their being wounded. After removal of the glands, if there was pus present, if there were fistulæ, or if the glands have broken down in being taken out, he advises that the surface of the wound should be touched with a 10 per cent. solution of chloride of zinc. Berger advocates extirpation only when the glands are still solid, and he puts down the recurrences after operation as numbering at least 30 per cent. Boeckel differed in that he places extirpation in the front rank as a form of curative treatment.

3. *Scraping.* In suitable cases, this is a favourite form of treatment among English surgeons, and it is a method which, when thoroughly and patiently carried out, meets with considerable success. Yet French surgeons seem almost unanimous in condemning it. For instance, Broca says that scraping should only be done as a last resort, since extirpation is nearly always possible. Again, Broeckel objects to scraping on the grounds that an ugly scar is produced, and that there is a risk of the dissemination of tubercle bacilli.

Thyroidectomy (Proceedings of the German Congress of Surgery, 1901). *Revue de Chirurgie*, Nov., 1901.

Kocher gives an account of his second series of 1,000 thyroidectomies and, in doing so, remarks that thyroidectomy is justifiable not only in the case of malignant goitres and of those benign ones which cause difficulty of breathing; but also in the case of a great number of parenchymatous goitres, which have resisted medical treatment. As a general rule, in benign cases,

he removes one half of the gland. The mortality in this series of 1,000 cases is 24·5 per cent. in cases of malignant goitres, and ·4 per cent, in cases of benign ones. Kocher attaches great importance to the employment of rigid asepsis, without using any antiseptic liquid, and of local anæsthesia by means of cocaine.

Intra-thoracic goitres are the most difficult to excise. He recalls instances of these, in which no tumour could be felt in the neck and in these cases the goitre is hidden and it may be quite impossible to diagnose its presence. Often the subjects of it are treated for asthma, more especially as they have attacks of difficulty of breathing, separated by intervals in which respiration is quite easy. In addition to this, which may be called the pulmonary form of bronchoceles, there also exists a mediastinal form, which is characterised by the signs of pressure on veins and may be accompanied by exophthalmos.

Finally, there is the tracheal form, the diagnosis of which is, of course, quite easy. Kraske related that he had done 400 thyroidectomies with a mortality of ·5 per cent.

As regards the non-operative treatment of bronchocele, Kocher says that phosphorous seems to have a good effect, but that further trial is required. Kraske strongly disapproves of the administration of thyroid extract, for he holds that it is dangerous and quite powerless to reduce the size of a goitre.

ABDOMINAL SURGERY.

The Surgery of the Stomach. (French and German Congresses of Surgery, *Revue de Chirurgie*, Nov., 1901).

It is the custom for continental surgeons to operate for chronic affections of the stomach much more readily than is the case in this country. Monprofit considers that the indications for gastro-enterostomy are daily becoming more numerous and that, as time goes on, it will be considered that the surgical treatment of chronic affections of the stomach is the only one to be recommended. As a proof of the numerous conditions for which operations on the stomach are performed, it may be stated that

Terrier has performed gastro-enterostomy fifteen times, seven times for malignant disease and eight times for non-malignant disease of the stomach. As examples of the non-malignant conditions may be cited gastralgia with hyperacidity, dilatation, ulcer and alcoholic gastritis. In these fifteen cases he has had one death and he has always performed the posterior trans-mesocolic operation. He advises that before operation the stomach should be prepared by being repeatedly washed out and that the process should be repeated after operation. To combat shock he relies chiefly on sub-cutaneous or intravenous injection of saline fluid, one to two litres being injected in twenty-four hours. The after results, as regards the functions of the stomach have been most satisfactory, even in the malignant cases, the cessation of symptoms being almost immediate. Pantaloin has had an even smaller percentage of deaths than Terrier, for he has done gastro-enterostomy twenty-five times with only one death. The objection has been raised against the posterior trans-mesocolic operation that intestinal obstruction may afterwards be caused by the loop of jejunum being nipped by the edges of the opening in the mesocolon. The speakers at the French Congress seem all to have operated by this method, but do not appear to have met with this after-complication. Monprofit certainly met with one case of intestinal obstruction following the operation, but this was due to the fact that some loops of small intestine had become adherent to each other and to the abdominal wall in the neighbourhood of the scar.

The Surgical Treatment of Vertical Dislocation of the Stomach was a subject discussed by Vantrin, who described three varieties of the affection :—

1. The uncomplicated vertical dislocation due to injury, the wearing of tight corsets and feebleness of the suspensory ligaments.
2. Accompanying a general ptosis of the abdominal contents.
3. Complicating pyloric stenosis.

It has been his custom to treat the first variety by performing

the operation of gastrorraphy, and to treat the third variety by gastro-enterostomy.

Intestinal Surgery. (*Revue de Chirurgie*, November, 1901.)

Intestinal anastomosis in muco-membranous colitis. Phocas relates the case of a child $5\frac{1}{2}$ years old, who had been ill for a month. There was great abdominal pain, together with vomiting and signs of incomplete intestinal obstruction, and a tumour, varying in size at different times, could be felt above the umbilicus. Phocas opened the abdomen and found that there was a colitis involving the cœcum, the ascending colon, and part of the descending colon. The affected intestine was swollen and hard, and the peritoneum over it was inflamed. An anastomosis was made between the lower end of the ileum and the transverse colon, and the patient made an excellent recovery.

Appendicitis. (*Revue de Chirurgie*, Nov., 1901.)

In referring to the opinion, now apparently largely held by American surgeons, that early operation in practically all cases of appendicitis is to be recommended, Sonnenberg holds that immediate operation is necessary only in cases of gangrenous appendicitis. These cases are characterised by the fact that adhesions, if they exist at all, do not prevent the spread of infection to the general peritoneal cavity, and they can be recognised by the great amount of constitutional disturbance, great rapidity of pulse, and very marked pain and resistance in the right iliac region. Perforating appendicitis, he states, generally forms a localised abscess, and the necessity for operation only shows itself gradually. Riese advocates operation in all cases where there is good reason for thinking that the appendix is gangrenous, or has perforated, and also in all cases in which a swelling is present. Delbet, Rehn, and Sprengel advocate a much more radical treatment, in that they advise operation directly the diagnosis of appendicitis has been made, and, moreover, they break down the adhesions and remove the appendix in all cases, even when an abscess is present.

The Surgery of the Spleen. (*Revue de Chirurgie*, Nov., 1901.)

Février classifies the various conditions of the spleen, in which surgical interference may be necessary, as follows:—

1. Injuries.
2. Abscess.
3. Cysts.
4. Hypertrophy: (*a*) Leucocythæmia; (*b*) Idiopathic; (*c*) Malarial; (*d*) Tubercular.
5. Displacement, with or without torsion of the pedicle.

Février has collected records of 56 cases of ruptured spleen, in 46 of which splenectomy was done with a mortality of 50 per cent. He has also collected records of 30 cases of traumatic hernia of the spleen, all successfully treated by splenectomy. For the treatment of hydatid cysts of the spleen he advocates splenectomy, puncture and injection being inadequate and dangerous, while incision with marsupialisation is a very slow method of cure. But, when there are many firm adhesions present, incision with marsupialisation is the only possible means of treatment. Splenectomy for leucocythæmic spleen is most unsuccessful according to the same authority, for he has collected records of 42 cases with only four recoveries and, as a matter of fact, in two of these four the nature of the case was doubtful. In all the others death from hæmorrhage rapidly took place.

Février also relates records of 86 cases of splenectomy for malarial spleen. All these have been operated on within the last ten years, the mortality being 17·4 per cent. The operation should be done only in favourable cases and, above all, should be avoided, where there are many dense adhesions. After the operation, all the symptoms due to the enlargement of the spleen disappear. It is true that the periodical attacks of fever may recur; but the operation should be done only in those cases, in which the patient's inability to lead an active life is due, not to the fact that he has malaria, but to his having one of the consequences of malaria, viz., an enlargement of the spleen.

By idiopathic enlargement of the spleen, Février means those cases, in which the enlargement is not due to leucocythæmia or malaria. He has collected sixteen cases of splenectomy for this condition with three deaths.

Cases of Displacement of the Spleen he divides into two classes:—

1. When the spleen is simply movable, but of normal size. In cases like this fixation has been done, not yet in enough instances to draw definite conclusions from, but with encouraging results.

2. Cases of enlarged, movable spleen, with or without torsion of the pedicle. Thirteen cases of splenectomy for this condition have been recorded in the last ten years, with three deaths.

Léonté has performed splenectomy altogether twelve times: ten times for malarial spleen, and twice for displaced spleen. In these twelve cases there were four deaths. He advises operation according to the following plan:—The incision should be made to the left of the middle line. The hilum should at once be sought for and the pedicle transfixed, the artery and vein being tied separately. Before the ligatures are tied, the spleen should be squeezed with the hand, so that as much blood as possible may be expressed from it. After ligature of the pedicle, the adhesions and ligaments should be separated, and, when necessary, ligatured. The spleen is then removed. By ligaturing the pedicle before the adhesions are separated hæmorrhage, which is otherwise free, is to a large extent prevented.

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

Session 1901-1902.

The Fourth Ordinary Meeting of the Session was held in the Birmingham Medical Institute, on January 9th, 1902, the President, Dr. E. MALINS, being in the Chair.

Forty-seven members were present

Confirmation of Minutes.—The Minutes of the previous Meeting were read, confirmed, and signed.

Election of Members.—The following Members of the Association were elected Members of the Branch, namely—

D. V. M. Adams, M.B., Workhouse Infirmary, Birmingham, nominated by Mr. Morrison ; George Bryce, 299, Wheeler street, Lozells, nominated by Mr. Morrison ; H. Jessop, Workhouse Infirmary, Birmingham, nominated by Dr. Kauffmann ; G. H. Tomlinson, M.B., Handsworth Wood, nominated by Mr. Morrison.

Paper.—Dr. A. Foxwell read a paper entitled "Some points in the prognosis and treatment of Dilated Hearts." In the discussion which followed, Mr. Alfred Freer, Dr. Saundby, Dr. Stacey Wilson, and Mr. R. A. Newton took part, and Dr. Foxwell replied.

Paper.—Dr. W. A. Potts read a paper on "The Auto-intoxications of Pregnancy," under the following headings:—"Auto-intoxication as a cause of disease ; disturbances of the alimentary system during pregnancy ; eclampsia ; the administration of thyroid extract during pregnancy." Remarks were made by Dr. Thomas Wilson and the President, and Dr. Potts replied.

MIDLAND MEDICAL SOCIETY.

The Fifth Ordinary Meeting was held on Wednesday, Jan. 22, 1902, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the chair.

Diffuse Symmetrical Scleroderma—Mr. Haslam showed a woman, æt. 37, the subject of this condition. It affected the skin of the face, neck, thorax and to a less extent the upper extremities. It came on about six months ago and reached its maximum intensity in five months, since which time it has improved. The case was a good example of that form of the disease, which begins as a leathery induration and not as an œdema.

Carcinoma of Sigmoid Flexure in a boy, æt. 15.—Mr. F. Marsh showed this specimen and related the history of the case. The patient, C. H., a well developed healthy looking boy, was admitted into the Queen's hospital, on June 26, 1901, for pain in epigastrium and passing of blood with his fæces. The first symptom was the passing of blood which began six months prior to his admission. It was generally dark in colour and frequently mixed with mucus. The pain, which was intermittent and referred to epigastrium, only commenced a month ago. Until then the bowels acted fairly regularly with the help of aperients, but during this last month they acted frequently—sometimes only blood and slime, sometimes scybala, sometimes loose evacuations being passed. There was no tenesmus nor frequent micturition. There has been a slight loss of weight, 5 lbs. in two months.

On examination, the abdomen was not found distended, resonance was normal, and no tumour could be palpated. Per rectum an indistinct fulness could be felt to the left in the recto-vesical pouch. Blood and mucus followed the withdrawal of the finger. On July 5th, a median incision was made and a growth found in the lower three inches of the sigmoid, most extensive on posterior aspect and completely encircling the gut at the lower end. Several of the mesenteric glands were enlarged. The growth was excised with a margin of healthy bowel, the mesenteric glands were removed, and with considerable difficulty the two ends of intestine, the middle of sigmoid and upper end of rectum were joined, as accurately as the position of the parts would allow, with Lembert sutures. A drainage tube was put on either side to the site of union on the floor of the pelvis, and for a few days a small quantity of fluid fæces came through one of them. A good recovery was made, the bowels acted regularly without difficulty and the boy went home well on August 7th. The line of union could be felt per rectum, and there was no constriction nor sign of recurrence. Microscopical examination showed that the growth was a columnar carcinoma. The case was shown as interesting from a

diagnostic point of view—the age being an early one for sigmoid carcinoma—and as a satisfactory result of excision and anastomosis. The subsequent history, however, pointed to recurrence, as the brother of the boy reported some four months after the operation that there was a return of blood in the fæces, but Mr. Marsh had not had an opportunity of examining him.

Pyonephrosis.—Mr. Christopher Martin showed a kidney removed on Feb. 11th for calculous pyonephrosis, from a woman, æt. 40. She had had for 15 years symptoms of stone in the right kidney (viz., pyuria, pain in the right loin, renal colic), and during this time she had had six normal confinements. No mass was to be felt, as the patient was very short and stout, but there was marked tenderness on deep pressure in the right renal region. There was no hæmaturia. The kidney was removed through a long horizontal incision beginning posteriorly at the erector spinæ and reaching anteriorly nearly to the rectus abdominis. This incision enables the surgeon to remove a big kidney without opening the peritoneum. The patient bore the operation well and made an uninterrupted recovery. The kidney was much enlarged and distended, with loculi containing pus. The pelvis and calyces were filled with large branching calculi.

Paper.—Mr. Hall-Edwards read a paper, illustrated by lantern slides, on “Experiences with the Imperial Yeomanry Hospital in South Africa.”

REVIEWS.

NOTHNAGEL'S ENCYCLOPEDIA OF PRACTICAL MEDICINE.*

IN publishing a translation of Professor Nothnagel's well-known Encyclopedia of Medicine, Messrs. W. B. Saunders and Company are rendering a very valuable service to English and American physicians. The work may fairly be described as the leading German text-book on medicine, and takes the same place in that country as is occupied here by Prof. Clifford Allbutt's recently completed System. The Encyclopedia is to be published in ten volumes, the first of which has just appeared.

This first volume is an admirable piece of work. It contains 628 large octavo pages, 472 of which are devoted to the subject of typhoid fever, and we can certainly say that for completeness and detail no other monograph on that subject can compare with it. The rest of the book deals with typhus fever. The original is from the pen of Prof. Curschmann, who has had immense experience of these diseases and has availed himself to the full of his opportunities of study. The translation has been carried out with marked success by Prof. Osler, with the assistance of Dr. Cole, and these writers with the consent of Prof. Curschmann, have incorporated all the new work which has been done since the publication of the last German edition. The additions mainly concern the pathology and bacteriology of typhoid fever, but in addition the chapter on perforation and peritonitis has, we learn from the preface, been practically rewritten.

* Nothnagel's Encyclopedia of Practical Medicine. Typhoid Fever and Typhus Fever. By Dr. H. Curschmann, Professor of Medicine, Leipzig. Edited with additions, by William Osler, M.D., Professor of the Principles and Practice of Medicine, Johns Hopkins University, Baltimore. Authorised Translation from the German, under the Editorial Supervision of Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Philadelphia and London: W. B. Saunders and Company. 1902.

The monograph on typhoid fever opens with a very full and useful account of its etiology, including the individual and external factors which favour the dissemination of the disease. Amongst these, we note that neither the author nor his translators have included the eating of infected oysters, an omission which may perhaps be taken as a comforting indication of their disbelief in the popular view of this matter. The section on pathology is also admirably complete. Especially interesting is the discussion of the relation of the lesions of the various organs to the specific bacilli, and the marked tendency of modern bacteriological investigation to show the specific nature of the majority of these lesions is strikingly displayed. We note that the writers do not consider the occurrence of attacks of typhoid fever without bowel lesions to be yet definitely proved.

Admirable as are the two sections already noticed, that on the symptoms and course of the disease stand out still more prominently. Here comes in the special feature of Prof. Curschmann's work, for he has subjected to the most minute study all the symptoms of the attack, with their frequent and puzzling variations. The study is in the highest degree instructive, even to those whose experience of typhoid fever is considerable, and we think that few physicians would fail to find matter for thought in its pages. One or two individual points only can be noted, but especial reference must be made to the elaborate investigation of the temperature and pulse in all stages of the disease from the incubation period onwards. The description of the unusual types of typhoid fever is again very instructive, and we note with some interest that Prof. Curschmann is inclined to attribute the typical "abortive" forms of the disease to absorption of the typhoid toxins without infection by the living organisms themselves. The section on peritonitis and perforation is, as has been already said, from the pen of the translators, and they are to be congratulated on the excellence of the chapter. They appear, however, to be somewhat over-cautious in doubting the occurrence of peritonitis without actual perforation. We have

recently come across a case of typhoid fever in which the patient died with considerable general peritonitis, but in which the most careful search failed to discover any leaking point by which the peritoneum could have become contaminated. Finally, we were disappointed at the meagre character of the reference to the disorder known as the "typhoid spine." Prof. Osler has himself written an interesting account of this curious affection, and we should have expected some amplification on his part of the original notice.

Passing over the sections on diagnosis and prophylaxis, we have nothing but praise to give to that which is concerned with the treatment of the disease. We notice that Prof. Curschmann speaks with distinct disapproval of the cold bath treatment as advocated in all its rigour by Brand and formerly carried out by the author himself. He is, however, a firm believer in the efficacy of bathing, but believes in the use of tepid water only, rarely cooled down more than a few degrees after the immersion of the patient. Especially does he urge the adoption of baths in cases in which there are symptoms of profound intoxication, and he advises their application as soon as these symptoms make their appearance. From two to four baths in the twenty-four hours are considered an ample allowance. The main contra-indications are hæmorrhage, even of slight degree, cardiac weakness, arterio-sclerosis, incompletely compensated valvular lesions of the heart, considerable pleuritic effusion, phlebitis and laryngeal lesions. Apart from the use of baths, the author avails himself to some extent of antipyretic drugs. His rules for diet are admirable, and are fully described, and we are glad to see that, whilst allowing a certain amount of variation in the food, he does not advocate the practice of giving solid nourishment till a comparatively late stage of convalescence. He relies on hypodermic injections of camphor or caffeine in cases in which strong stimulation becomes necessary.

The latter half of the book deals with typhus fever in the same thorough manner, but our own experience of the disease is nil, and we cannot attempt any detailed criticism. Here

Prof. Osler has, we gather, found but little to add to the original account.

The work of translation has been admirably carried out, and we have but rarely been reminded of the fact that the book was originally written in another language. Here and there a clumsy sentence is to be noted, and in one part of the book there is a curious tendency to a modified use of the double negative, which is at times a little perplexing. Moreover, occasionally the translators allow themselves the use of words, such, for example, as "fugaciousness," which may be the counterpart of the German expressions, but are certainly not English. Once only, namely, on page 355, have we detected a slip in the construction of a sentence.

We can hardly imagine that successive volumes can treat the remaining diseases with the same fulness which marks the first of the series. But even if those yet to appear fall below the standard set by these two monographs, the work must still be well worth possessing.

A LABORATORY HANDBOOK OF URINE ANALYSIS AND PHYSIOLOGICAL CHEMISTRY.*

THIS book differs from the handbooks of urine analysis which have been reviewed within the last year or two in this Journal, in that it confines itself strictly to the chemistry of the subject, and makes no reference to the morbid conditions which are responsible for the appearance of abnormal constituents in the urine. This is on the whole an advantage, for there is but little to be gained by including clinical matters which can be more satisfactorily learnt from the ordinary books on medicine and surgery. The book is further written more definitely from the point of view

* A Laboratory Handbook of Urine Analysis and Physiological Chemistry. By Charles G. L. Wolf, B.A., M.D., Instructor in Physiological Chemistry, Cornell University Medical College, New York. Philadelphia and London : W. B. Saunders & Company. 1901.

of clinical examination than many of those above mentioned. The main adverse criticism which is to be made is that it fails to include some important details—for example, the fallacies of the Fehling test for sugar, and of some of the tests for albumen, together with the means of overcoming these difficulties. In other respects, the information is full, and the workmanship of the whole book is distinctly good.

In addition to the chemical examination of the urine, that of the stomach contents and the products of digestion is also included. This part of the book is very satisfactory, and a knowledge of the methods described should be in the possession of every practitioner of medicine. We think that the book is a useful one for reference, and trust that it will be a little amplified in some respects in later editions.

CLINICAL LECTURES ON THE VARIOUS FORMS OF INTRA-ABDOMINAL SUPPURATION.*

THE first four of Mr. Tubby's excellent Clinical Lectures on intra-abdominal suppuration are devoted to the subject of appendicitis. The author rightly remarks at the outset on the impossibility of rigidly classifying the clinical varieties of this disease, with its numerous variations and extraordinary irregularities. But he has succeeded in giving a very clear clinical picture of its main types. Besides the clinical aspects, he deals with the anatomy, causation and treatment of the disease. We notice that in the matter of etiology Mr. Tubby does not refer to the question of the occurrence of epidemics of appendicitis; yet there is much evidence in favour of the view that such outbreaks do occur, and we fancy that in Birmingham at any rate we have recently been passing through a period of increased liability to the disease.

* Clinical Lectures on the Various Forms of Intra-Abdominal Suppuration. By A. H. Tubby, M.S., F.R.C.S., Surgeon to the Westminster Hospital, and Senior Surgeon to the Evelina Hospital for Children. London: The Medical Publishing Company, Ltd. 1901.

The three remaining lectures deal with subdiaphragmatic abscess, pelvic suppuration and tubercular peritonitis, and general peritonitis. Each gives a really excellent account of its subject, and we can confidently recommend them as admirable clinical demonstrations of the matters of which they treat.

A MANUAL OF THE PRACTICE OF MEDICINE.*

IN reviewing the first edition of this book in 1896, we spoke favourably of its plan and execution. It is a good type of text-book, and the new edition, which has been brought well up to date, is in many respects a distinct improvement on its predecessor. Considerable care has been taken with the process of revision, and several of the articles have been largely re-written, whilst other new sections have been added. Especial attention has been given to the revision of the section on Diseases of the Digestive System, which has to a considerable extent been written afresh. The article on Malaria is also entirely new, and gives a good account of its subject. The book is excellently illustrated, many of the plates and engravings being much above the average of those usually found in text-books of medicine.

Medical Institute.

WE are asked by the Committee of the Birmingham Medical Institute to state that a certain number of duplicate books are on sale. The books can be seen and information as to price obtained on application to the Librarian.

* A Manual of the Practice of Medicine. By George Roe Lockwood, M.D., Attending Physician to Bellevue Hospital, New York. Second Edition, Revised. Philadelphia and London : W. B. Saunders and Co. 1901.

University of Birmingham.



FACULTY OF MEDICINE.

EXAMINATION for the Diploma in Public Health, January,
1902.

PASS LIST.

Parts I. and II.—Thomas Edward Dyson.

PUBLISHERS' DEPARTMENT.

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MESSRS. BURROUGHS & WELLCOME send us further samples of New Tabloids, in the shape of preparations of aspirin, or acetylsalicylic acid. This drug has lately acquired some credit in the treatment of the various rheumatic affections. It is given in doses of from 5 to 15 grains, and each tabloid contains 5 grains.

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From H. K. Lewis—

Rough Notes on Remedies. By WM. MURRAY, M.D., F.R.C.P.

Handbook of Bacteriological Diagnosis for Practitioners. By W. D'ESTE EMERY, M.D., B.Sc., Lond.

From Young J. Pentland—

The Edinburgh Medical Journal. Edited by G. A. GIBSON, M.D., F.R.C.P., Ed. New Series, Vol. x.

From W. B. Saunders and Company—

A Text-Book of Pathology. Edited by LUDVIG HEKTOEN, M.D., and DAVID RIESMAN, M.D. Vols. i. and ii.

From John Wright and Co.—

Elementary Bandaging and Surgical Dressing. By the late WALTER PYE, F.R.C.S. Revised by THOS. CARWARDINE, M.S., F.R.C.S. Ninth Edition.

First Aid to the Injured and Sick. By F. J. WARWICK, B.A., M.B., Cantab., M.R.C.S., L.S.A., and A. C. TUNSTALL, M.D., F.R.C.S., Ed.

From Sherratt and Hughes—

The Bradshaw Lecture on Prognosis in Relation to Disease of the Nervous System. By JUDSON S. BURY, M.D., Lond., F.R.C.P.

From the Washington Government Printing Office—

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Second Series. Vol. vi.

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Human Embryology and Morphology. By ARTHUR KEITH, M.D. (Aberdeen), F.R.C.S.

From the Century Printing Co. Ltd.—

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THE
BIRMINGHAM MEDICAL REVIEW.
MARCH, 1902.

ORIGINAL COMMUNICATIONS.

THE CLINICAL SIGNIFICANCE OF LEUCOCYTOSIS.*

BY JOHN T. HEWETSON, M.D. (EDIN.), F.R.C.S. (ENG.).

IN this country clinical examinations of the blood have hitherto been employed almost exclusively by the physician, and even then only in conditions known as "diseases of the blood." In American and Continental hospitals, hæmatological examinations have been adopted as a clinical method with a much wider application. We are beginning to realise, however, that such examinations can give information to the physician in diseases other than "diseases of the blood," and further, that they can be of material value to the surgeon. Quite three-fourths of my observations upon this subject were made in surgical maladies, and none of the medical cases examined were suffering from any of the so-called "diseases of the blood." I think that British surgeons would do well to follow their American contemporaries in this matter of blood examinations. Nothing is lost by exhaustive and careful clinical method. In the large American hospitals, the blood is examined by house-surgeons, or hæmatologists, in a very large number of clinical conditions, from which the most valuable statistics can be compiled in the course of a few years, not to mention the immediate value in diagnosis which

* A portion of an M.D. Thesis.

frequently follows. It is the blood which sustains the vitality of every organ in the body ; through it the products of constructive and destructive metabolism are carried to their respective destinations. Should it therefore be surprising, given morbid processes seriously affecting this metabolism, that a careful study of the hæmic elements should prove of value to the clinician ? We have long known of the amœboid movements of leucocytes, of their phagocytic action upon bacteria, of their special secretory qualities, and, above all, of the important part they play in all inflammations. Is it not then a trifle surprising that their careful enumeration, both quantitatively and qualitatively, has not been adopted by the surgeon at an earlier date ?

The necessary technique for such examinations has been improved very considerably during the last ten years, and a very satisfactory degree of accuracy can be claimed for our results at the present time. To men like Ehrlich, Thoma, Hayem, and many others, we owe much, not only for their scientific genius, their emphatic pathological conclusions and their brilliant histological results, but also for that scientific accuracy and untiring perseverance which cannot fail to bear fruit in the younger generation of workers. A complete examination of the blood occupies so much time that it is almost impossible for the busy practitioner to carry it out with any degree of frequency or regularity. With this feeling in my mind, I have worked at the subject of "leucocytosis," in order to determine how much information of clinical value is likely to be obtained from such a partial examination as simple enumeration of the white blood corpuscles. It is far from my intention to suggest that the examinations of red corpuscles, hæmoglobin, alkalinity and freezing point of blood are unimportant ; they are all important and growing more so every day, yet to the busy practitioner they are less possible, and I venture to think less valuable than estimations of the leucocytes.

Every medical practitioner accustomed to the use of the microscope will have no difficulty in counting white blood corpuscles, and seeing that the whole process can be done in the

short time of ten or fifteen minutes, it ought to be possible to the busiest.

Compared with leucocytes, the erythrocytes are much less liable to rapid change in their numerical value. It is true that in such diseases as pyæmia, septicæmia, and extensive suppurations, we get moderately rapid decrease in the red blood corpuscles, but even here it takes days and even weeks to produce a relatively large diminution. With leucocytes it is very different. We rarely observe a leucopenia in any disease; if not normal, it is generally a leucocytosis. This increase occurs with great rapidity, so much so that in certain pathological conditions the average number of white blood corpuscles may be multiplied several times within a few hours of the onset of the disease, and as a result of effective treatment the return to normal may be correspondingly rapid. Such a leucocytosis must have some clinical significance, and some definite purpose to serve. Its great constancy in certain diseases precludes the possibility of it being accidental, or a mere coincidence.

We cannot but regard leucocytosis as an established clinical phenomenon, occurring and disappearing under definite pathological conditions.

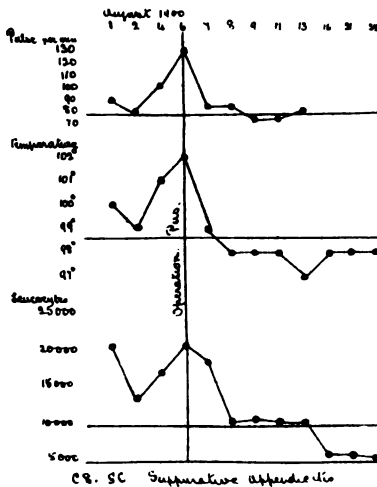


CHART I.

The charts I hope to submit for observation later will prove that there is a leucocyte curve quite as positive in its value as that of the temperature or pulse. At present I will content myself with showing two charts.

Chart I. is that of a case of suppurative appendicitis, illustrating the pulse, temperature, and leucocyte curves, before and after operation.

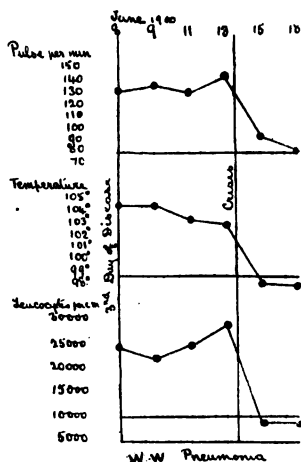


CHART II.

Chart II. is that of a case of uncomplicated pneumonia, showing similar curves up to and following the crisis.

I can furnish many examples in which it is clearly proved that the leucocyte numeral is on the whole a more delicate indicator of underlying disease than either the temperature or the pulse. That is not, however, the object I have in view. Examinations of the temperature and pulse are quite as valuable to the surgeon as they are to the physician; they supply valuable information in the great majority

of acute clinical conditions whether medical or surgical, and in certain cases their value is much greater than in others. In all clinical work, heat value and pulse rate are watched and charted with the greatest regularity. The clinician knows by experience their great value in diagnosis; he has long learned to rely upon their information, and to regard them as honoured and well tried physical signs. Their careful record has prevented many mistakes, spared many needless days of professional anxiety, and indeed been the means of saving many a patient from an early grave. In like manner I feel sure that regular enumeration of leucocytes would be of great value to the medical practitioner. The same frequency of examination is not necessary, such would involve too much of his time, and I can assure him that he would be amply repaid for the little additional trouble incurred by moderately regular leucocyte estimations.

Much has already been done to show that regular hæmatological examinations are worthy of the utmost attention, their assistance in the diagnosis and prognosis of certain diseases other than blood diseases proper, has been proved beyond a doubt.

I feel confident that the day is not far distant when it will be a regular routine both in hospital and private practice to make a careful examination of the leucocytes in a large group of clinical cases. If this were done with the same regularity, though not necessarily with the same frequency as we examine the temperature and pulse, many undiagnosed conditions revealed in the *post-mortem* room would be discovered during life and successfully dealt with. Are our clinical methods so perfect that they cannot be improved, and are there still no cases of such profound obscurity, such baffling difficulty, that a ray of light is not welcome from any scientific source? I firmly believe that in many such cases signal assistance might be obtained from careful leucocyte estimations.

No single clinical method or physical sign can be regarded as infallible, and I do not for one moment wish to imply that the examination of the white blood corpuscles is an all important one. I wish it to be considered in conjunction with other physical signs, and as such, I believe it will prove to be a valuable adjunct to our present clinical methods. A perfect clinical picture is obtained by the careful study of the numerous symptoms and physical signs which a complete clinical examination reveals. For the success of such a picture, however, a very accurate sense of proportion is absolutely necessary. A blood examination may unfold to the clinician a part of that picture, sometimes a large part, at others a small one; in any case it is only by prolonged experience, by repeated records, that such can be interpreted aright.

I have striven at all times to pursue my investigations with a perfectly open mind, never allowing the current opinions as to the condition of the patient to influence my results. During my observations, which were made in 1900, I carried out upwards of 1,500 leucocyte counts, practically all of which were furnished by cases in the Birmingham General Hospital. In many of my cases I counted the red corpuscles and estimated the amount of hæmoglobin, but I have purposely omitted to record the results of these examinations in order to prove that leucocyte estimation alone is a clinical method of the greatest value.

Seeing then that this limited examination of the blood is so simple, involving such a small expenditure of time, and certainly within the capacity of every busy practitioner, I hope that these records may in some measure tend to stimulate young practitioners of our own school to work at this subject and thus to decide for themselves its true clinical value.

The reports of bacteriological examinations, most of which I was permitted to carry out in the hospital laboratory, are introduced into this paper merely to throw further light upon the particular case of suppuration, meningitis, etc., whose blood I was investigating.

Pulse rate, respiratory rate per minute, and degree of temperature were taken from the chart by the bedside of each patient. They represent the highest point reached by temperature, pulse, and respiration at any time during the day upon which the corresponding leucocyte count was taken. They have been placed in the record to shew as briefly as possible the general state of the patient and further to bear comparison with the approximately simultaneous position of the leucocyte curve.

Operations and *post-mortems* were generally witnessed by me in person, failing which I copied the results from the operation and *post-mortem* books respectively. I saw sections of all tumours spoken of in the record. Anæsthetics were copied from the anæsthetic book.

To the Honorary Staff of the Birmingham General Hospital I am deeply indebted for the ready consent given me to pursue my observations and for the great interest they manifested in my results. To the Resident Staff of the year 1900, I tender my sincere thanks for the many facilities they afforded me in reporting cases, soon after admission, in which I was specially interested.

Before proceeding to results, I should just like to emphasise several points in the general technique of leucocyte counting.

The hæmocytometer used was the Thoma Zeiss. I possessed several "white pipettes" which enabled me to get through my daily observations more rapidly. The popular idea that the

glass ball in the bulb of the Thoma Zeiss is a source of error, due to adherence of leucocytes, can, I think, be entirely overcome by thorough cleanliness. It was my habit to run through the pipettes a quantity of strong nitric acid every few days, and to digest them every week with dilute hydrochloric acid and pepsin. This weekly routine is of course quite unnecessary to the man who is using his pipette less frequently. Having the pipette perfectly dry, so that the glass ball moves freely, is an essential condition before any examination can be made.

The best strength of diluting fluid is '3 or '5 per cent. acetic acid; in this, white blood corpuscles will remain quite well preserved for twenty-four or forty-eight hours. The addition of methyl-violet gives little or no advantage, and it soon stains the pipettes. Stronger solutions of acetic acid disintegrate the white corpuscles, so that it is impossible to keep a full pipette long before making a count: it is further liable to produce clumping or balling of the leucocytes, a condition which entirely disqualifies any result. If, on the other hand, the solution is more dilute, taking of the red corpuscles is prevented, so that it is a very difficult matter to count the leucocytes. The needle used for the puncture ought to have a perfect point: Hagedorn or large triangular needles are very good. With a good needle it is quite possible to examine the blood of a sleeping child without waking it. A single bold plunge is infinitely more merciful than numerous small pricks. Gentle rubbing of the lobe of the ear with sterilized wool just previous to the puncture, is of value in producing an active hyperæmia, and removes any gross scales that might be present. The blood on no account must be expressed from the wound; this produces a local cyanosis, which is sufficient to unduly increase the corpuscular value of the drop expressed. A dilution of the blood by twenty times is probably the most useful in counting white corpuscles, as met with in diseases apart from leucocythæmia. Should an air-bubble accidentally enter the pipette, the instrument must be cleaned and the whole process repeated. The best way to clean a pipette is to run through it, first, distilled water, and then

absolute alcohol, and lastly, methylated ether. A ball air-pump is then slipped on to one end of the pipette and a stream of air is passed through it until the glass ball rolls freely within the bulb. Blood should never be allowed to dry in a pipette; to prevent such, it is advisable to clean the instrument directly the count is made. Should such a misfortune occur, nothing can be done but to digest the dried coagulum with dilute hydrochloric acid and pepsin.

In diluting the blood with acetic acid solution, vigorous suction is of advantage at first in that it sweeps the blood up from the barrel of the pipette into the bulb where the mixing alone takes place. When mark II is exactly touched by the mixture, it is advisable to shake the pipette thoroughly in order to mix the blood, so that if a drop or two should fall out in carrying it to the microscope the result is not spoiled. This spilling, however, can be avoided by holding the pipette horizontal. Agitation of the pipette in several directions for two minutes is quite sufficient. The drop to be examined is generally selected from the middle of the blood by expelling half of its contents. Clean the tip of the pipette with absorbent wool and touch the surface of the ruled plateau with the point until a sufficiently large drop has formed. I always made two counts from the same pipette, these being generally very similar in numerical value, an average was made; should they differ much, a third count was made, and the average of the two most nearly approximated was taken. Newton's rings must always be seen on the cover slip before the slide is counted, their absence usually means a dirty slide or cover slip. It is very necessary to cleanse the glass from time to time with absolute alcohol and ether.

I have not attempted to describe the general routine of my method, because in other respects it is identical with that given in text-books. I feel very confident, that provided a careful and rigid technique is adhered to, a very satisfactory measure of accuracy can be obtained by this instrument. If a man persistently uses all precaution against error, rejecting examinations

in which he knows there have been mistakes, he will be amply repaid by the universal results he obtains from day to day.

Nearly all my observations upon patients were made between 9.30 a.m. and 1 p.m., breakfast was at 6 a.m., dinner at 12.30 p.m., so that digestion leucocytosis was as far as possible eliminated.

The average leucocyte count in health I take to be anything between 5,000 and 10,000 per cubic millimetre. The films for staining were made on specially prepared glass slides by means of cigarette paper. By this method large films can be obtained, and after a little practice very beautiful ones. Films on slides have an advantage over cover slip preparations, in that they can be labelled at once, a matter of great importance when you have many films to prepare in a day. They are further more easily handled during fixing and staining.

Most of my films were fixed by heat in the dry sterilizer. The heat I liked best was from 105° to 110° Centigrade for one hour. The high temperatures of 140° to 150° Centigrade, as recommended by Cabot, were not successful in my hands. After fixing with heat I invariably used Ehrlich's triacid stain. At the commencement of my investigation I had very great difficulty in obtaining good stain, and I was compelled to change it several times before my results were satisfactory. There can be no question about the brilliance of this stain, provided that you fix with the right heat. You cannot over-stain with it; your mistakes come in the fixing, not in the staining. Its results, however, are by no means perfect, for although its colour effects are so lovely, its definition is not so excellent as that of the eosine and methylene blue mixtures. The nuclei do not stain so deeply with the triacid stain, and their outline is not so distinct as in those stained with eosine and methylene blue. In making my differential counts upon my fatal cases of pneumonia, I had very great difficulty in distinguishing the exact outline of nuclei, a matter of very great importance in differentiating myelocytes from polymorphonuclear cells. Ehrlich's mixture is a very brilliant granular stain; it is this feature

which largely accounts for the imperfect definition of nuclei in preparations stained by it. Then again, I had difficulty occasionally in deciding whether a cell was a coarsely granular oxyphile (eosinophile), or a finely granular oxyphile (neutrophile); the stain seemed to bring out cells transitional between the two. This may be a recommendation for it, but in the light of our present classification of leucocytes it is very disconcerting in making differential counts.

With my films fixed in formalin vapour and stained by eosine and methylene blue, I had very good results. The definition of nuclei was always good, and I had no difficulty in distinguishing coarsely granular from finely granular oxyphiles. My results by this latter method were more universal than by the Ehrlich method. A good Ehrlich, however, is better than a good eosino-methylene blue specimen.

For the general practitioner I would strongly recommend the simpler stain, especially one of those recent combinations, such as Jenner's or Leishmann's, which fix and stain at the same time. To obtain a good Ehrlich film fixation by heat is almost an essential, a method which is not easy in private practice, even with improvised methods.

APPENDICITIS.

In this, which is one of the commonest surgical maladies to which man is heir, there is still room for elucidation and progress.

As in acute local suppurations elsewhere, there are generally very definite alterations in the quality of the blood. The hæmoglobin undergoes diminution and the erythrocytes decrease in number according to virulence and protracted existence of the toxæmia induced by the suppurative focus; but by far the most striking feature in the hæmatological chart of appendicitis is the peculiar leucocytic reaction. This reaction depends upon a variety of conditions which shall be dealt with in so far as we are in a position to interpret them, after the records have been given. Red corpuscles and hæmoglobin value are so frequently

below par, even in healthy persons, that we are generally unable to put any interpretation upon their condition during such a disease as appendicitis. The leucocytes, however, if estimated and charted at regular intervals, can in the great majority of cases be of signal assistance to the clinician, not only in diagnosis, but also in determining the exact progress of the inflammatory phenomena after operation. The post-operative course of suppurative appendicitis is by no means free from complication or danger, and I think that it would be a step in the right direction if regular blood examinations were made after all such operations.

Very frequently there is not the slightest difficulty in making a diagnosis in suppurative appendicitis. The pulse, temperature, and local conditions all suggest the presence of pus, but there are cases of deeply seated suppuration, retro-cæcal or pelvic, in which the local manifestations of pus are absent, and in which the temperature and pulse may be misleading. We have all met with such conditions and it is in such that the surgeon is apt to delay his otherwise prompt operative measures. Under such conditions, maintained or increasing leucocytosis generally exists, which, if determined, would probably guide him to a correct conclusion concerning the case.

The method of waiting until an abscess points, or until a non-adherent abscess becomes adherent before deciding to operate, involves more danger owing to possible extension with general peritonitis, than prompt evacuation of the pus even though the general peritoneal cavity is opened in doing so. A deeply seated abscess can be safely drained if the general peritoneal cavity is shut off by careful packing. So that once an abscess is diagnosed the best chance is given to the patient by its prompt evacuation, even though the general peritoneal cavity is opened. I dwell upon this point merely because I feel that making a diagnosis of suppuration is equivalent to a prompt call for operation. This makes a very sharp distinction between the lines followed in suppurative and catarrhal appendicitis respectively.

Localised suppurations around the appendix may recover

spontaneously without operation. This may be due to a variety of causes, such as evacuation into the adjoining viscera, or externally, or by the organisms losing their vitality and the gradual absorption of the pus by phagocytic action and lymphatic absorption. This fact no doubt accounts for some of those rare cases of appendicitis which, whilst exhibiting a definite leucocytosis suggestive of suppuration, have got perfectly well without operation. Such terminations are rare, however, and the risk of trusting to such is very considerable and wholly unjustifiable.

Before passing to my actual results in this disease, I would like to say one or two words concerning the charts. They are an approximate representation of the written record. The pulse, temperature, and leucocyte numeral are placed side by side, the normal of each being indicated by a horizontal line in order that the existing curve can be appreciated at a glance. The vertical lines indicate incidents of interest during the time of observation.

I propose to arrange my cases as follows: I.—Appendicitis with Local Suppuration; II.—Appendicitis with General Peritonitis; III.—Catarrhal Appendicitis.

I. APPENDICITIS WITH LOCALISED SUPPURATION.

1.—H. J. R., æt. 23, male. Local signs of abscess entirely absent.

	Temp.	Pulse.	Resp.	Leucocytes.
May 7th, 1900	98	80	24	8000
8th	99	72	20	10560
9th	98	60	24	13840
11th	98	80	22	13200
12th	98	72	20	15600
14th, Operation.	One ounce of pus found well shut off by adhesions. Anæsthetic—Nitrous oxide and ether.			
15th	100	64	22	17600
16th	98	72	20	16240
18th	98·6	72	24	10640
19th	98·6	—	—	14160

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	Temp.	Pulse.	Resp.	Leucocytes.
May 21st	98·6	—	—	10240
22nd	98·6	—	—	9450
24th	98·6	—	—	9360
28th	98·6	—	—	5600
June 1st	98·6	—	—	8880
5th	98·6	—	—	6800

Dressed daily; wound entirely healed on June 6th. It is very probable that this case was admitted before a local suppuration was established. I infer this from the initial count which gradually rose despite his rest and low diet. It is also probable that his leucocytosis at the time of operation was higher than that existing on May 12th. The interesting features are the entire absence of local signs of suppuration together with a normal temperature and pulse rate.

2.—M. B., æt. 22, female.

	Temp.	Pulse.	Resp.	Leucocytes.
May 17th, 1900	102	120	32	9840
19th	97	80	24	7920
21st	98·6	70	24	12160

Operation performed after the last count; half a drachm of pus was found in the region of the appendix well shut off. Anæsthetic—Ethyl chloride, ether.

22nd	98·6	69	22	12800
24th	98·6	66	22	10000
26th	98·6	—	—	6800
31st	98·6	—	—	6960
June 7th	98·6	—	—	6560

Little or no discharge after the operation.

This case was regarded as a catarrhal condition. It is the lowest leucocyte count I ever found in suppurative appendicitis, except case 23. The amount of pus was very small and well shut off. The high temperature and rapid pulse on admission was probably due to her journey to hospital. The recovery was uninterrupted.

3.—M. H., æt. 35, male. Illness commenced on June 1st; marked local signs of inflammation; patient looks very ill.

	Temp.	Pulse	Resp.	Leucocytes.
June 3rd, 1900	98·6	96	24	17760

Operation same evening revealed a sloughing appendix with a few drachms of pus free in the general peritoneal cavity
Anæsthetic—Ether.

June 4th	98.8	88	24	10000
5th	97	90	26	7760
7th	98·6	80	20	10000
10th	99	—	—	8720
13th	99	—	—	8080

Wound healed on June 13th. Dressed daily. The prognosis in this case seemed very doubtful on June 3rd, and it is worth noticing that the leucocytosis was very definite on that day. His post-operative progress was most satisfactory.

4.—P. G., æt. 5, male. Obscure symptoms; pain, tenderness and distension in the epigastric region; no lump to be felt anywhere; no vomiting; regarded as a probable typhoid condition.

	Temp.	Pulse.	Resp.	Leucocytes.
June 4th, 1900	101	106	40	17760

Widal's reaction on this day proved negative.

5th	101	118	40	19680
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6th Abdomen opened; abscess containing several ounces of pus found behind the cæcum. Anæsthetic—Chloroform.

7th	102·5	140	48	41200
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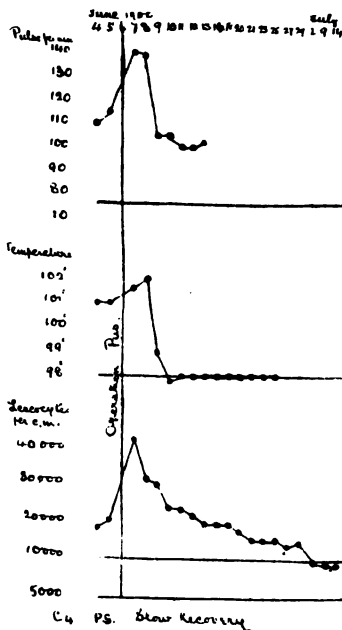
Dressed; drainage tube and packing removed, behind which a large amount of pus was pent up.

8th	102·5	136	40	32320
9th	99	108	32	31520
10th	97·5	108	32	24160
11th	98·6	96	36	24480
12th	98·6	96	34	22160
13th	98·6	104	40	19680
16th	98·6	—	—	19280

	Temp.	Pulse.	Resp.	Leucocytosis.
June 18th	98.6	—	—	19680
20th	98.6	—	—	14480
21st	98.6	—	—	13840
23rd	98.6	—	—	13520
25th	98.6	—	—	16650
27th	98.6	—	—	12960
29th	98.6	—	—	14080
July 2nd	98.6	—	—	8080
9th	98.6	—	—	10880
14th	98.6	—	—	8080

Wound dressed daily ; discharged until July 8th.

The attached chart will present at a glance the characteristic leucocyte curve. A Widal's reaction when negative cannot



exclude typhoid until the patient has been ill five days at the least, and when positive it does not exclude appendicitis, because the patient may have had typhoid a short time prior to the existing attack. In this class of case the leucocyte curve is of great value. It gives information within a day or two of the onset of the disease, and whether the patient has had typhoid or not. His high leucocytosis on the day following operation is probably due to an increased absorption of positively chemiotactic toxin by the freshened abscess wall ; to a less extent to loss of blood and the influence of the

anæsthetic. The most remarkable feature about this case is the very slow post-operative progress, his leucocyte numeral falling

gradually, due no doubt to the very great difficulty experienced in draining such a deep abscess cavity.

5.—F. D., æt. 19, male. Well marked local conditions present.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 30th, 1900	101·8	96	36	13680
July 1st,	100·4	92	36	15400

Operation, after count made. Three or four ounces of fœtid pus evacuated. Anæsthetic—Ether.

July 3rd	98	80	20	13600
4th	96·2	88	22	15120
5th	100·2	116	28	26240

A large amount of pus was pent up behind the packing on this day.

6th	99	100	28	19840
7th	99	100	24	11120
9th	99·5	108	28	22120
11th	99·6	104	28	22120

A large amount of discharge and much brawniness around wound.

13th	99·4	108	32	16240
15th	99·8	128	32	22320

July 16. Abdomen again opened; a large quantity of pus was evacuated from region of appendix and pelvis; free drainage was established. Anæsthetic—Gas and ether.

17th	98	108	24	17920
19th	101·4	148	32	25280

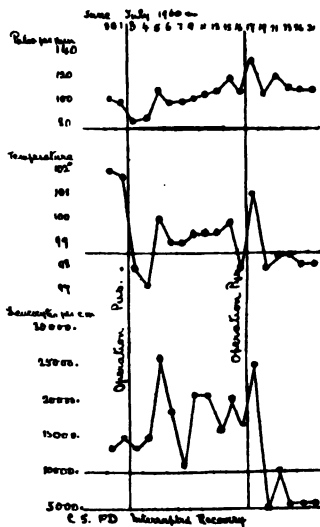
A large quantity of pus was evacuated from behind the tube on this date.

21st	98	100	24	5120
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To day the patient looks quite a different man, so great is the general improvement.

23rd	99	120	24	10240 (after tea)
26th	98·6	104	24	7520
31st	98·6	—	—	8400

Healed.



The temperature, pulse, and leucocyte count rival each other very closely in the accurate manner with which they reflect the condition of the patient on any particular day. His general condition until about July 21st gave rise to the utmost anxiety. The leucocyte curve was extremely fitful, the ebb and flow being due no doubt to the varying amounts of discharge and its degree of retention. On July 21st the leucocyte numeral reached normal for the first time from which date his recovery was assured.

6.—E. W., æt. 17, female. Regarded as catarrhal appendicitis.

	Temp.	Leucocytes per c.m.
July 3rd	98	9520
5th	98.6	12800

Not followed further. Operation, on July 11th, revealed a small abscess in the region of the appendix. This case is of little interest, because of my few observations upon it. As I have selected none of my cases, this one, which is one of the least instructive is added. It is probable that her leucocyte numeral after July 5th continued to increase.

7.—A. L., æt. 21, male. Local signs of suppuration present.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 11th, 1900	100.5	84	—	12800
12th	101.2	84	—	12640

Differential count on July 12th was as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	81.9
Small lymphocytes	8
Large lymphocytes	8
Transitional cells	2.1

Operation after count revealed a small abscess well shut off by adhesions. Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 13th	100	—	—	17440
14th	N.	—	—	9680
16th	N.	—	—	9820
19th	N.	—	—	8730
23rd	N.	—	—	7760

Healed on July 23rd.

This case illustrates the stagnant leucocyte count of a small abscess well walled off by adhesions and giving rise to very little toxin absorption. Although the quantitative count in this case was only a little over 12000 per c.m., the fact of there being a moderate increase of polynuclear cells associated with it tended to confirm the opinion that pus was present.

8.—G. C., æt. 14, male. No local signs of suppuration; regarded by the surgeon as a catarrhal condition.

	Temp	Pulse.	Resp.	Leucocytes per c.m.
Aug. 1st, 1900	100	88	28	21840

Differential count:—

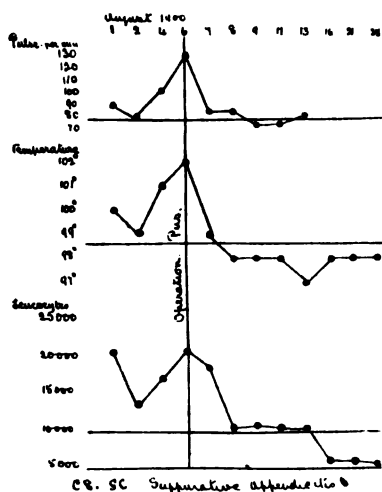
				Per cent.
	Polynuclear finely granular oxyphiles			94
	Lymphocytes - - - - -			4
	Transitional cells - - - -			1.6
	Polynuclear coarsely granular oxyphiles			4
Aug. 2nd	99	80	24	13120
4th	101	100	24	17600
6th	102	130	30	21040

Operation on this day revealed an abscess behind the colon containing several ounces of pus. Anæsthetic—Ether.

Aug. 7th	99	86	24	20560
8th	98	84	25	11840
9th	98	72	22	12480
11th	98	70	24	10240

	Temp.	Pulse.	Resp.	Leucocytes Per cent.
Aug. 13th	97	80	22	10240
16th	98·6	—	—	6800
21st	98·6	—	—	6560
25th	98·6	—	—	5600

Healed on August 25th.



His leucocytosis on admission was, to some extent, due to the disturbance of his journey. It fell on the second day to its true inflammatory value, from which point it gradually increased, and it was this real increase which induced the surgeon to interfere in spite of the entire absence of local suppuration. It is of interest to observe how closely the temperature-pulse and leucocyte curves

follow each other in this case. Although the abscess was very deep in the abdominal cavity it drained well.

9.—W. B., æt. 10, male. Tender swelling in region of appendix.

	Temp.	Pulse.	Resp.	Leucocytes.
Aug. 14th, 1900	97	78	21	28720

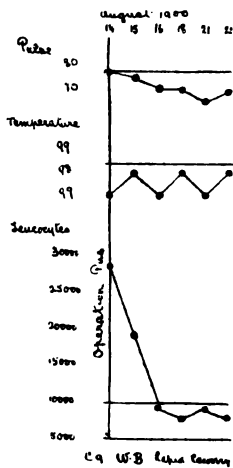
Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles	94
Small lymphocytes	4·2
Large lymphocytes	1
Polynuclear coarsely granulated oxyphiles	·6
Transitional cells	·2

Operation, performed same evening, revealed an abscess containing several ounces of pus, which aërobically gave a pure

growth of bacillus coli. Anæsthetic—Gas, ether, A.C.E. mixture.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 15th	98	76	29	19360
16th	97	72	28	9680
18th	98	72	20	8080
21st	97	60	18	9360
25th	98	72	20	8720



Drained well; excellent recovery.

The accompanying chart brings out very forcibly the marked difference between temperature and pulse on the one hand and the leucocyte count on the other; the heat value and pulse rate were normal, despite the existence of a large abscess. His after progress was most satisfactory, the wound having healed by August 25th.

10.—N. P., æt. 10, female. Local signs of suppuration present.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 26th	101.2	116	26	15120

Operation same evening; several ounces of pus evacuated; well shut off by adhesions.

29th	99	110	32	12160
30th	N.	88	24	13680
Sept. 1st	N.	—	—	5920

This case, though discharging pus freely for a few days after operation, had an uninterrupted recovery, and was discharged on September 15th.

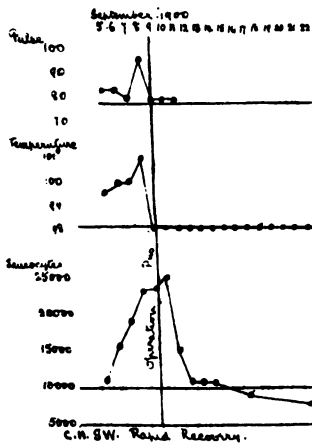
11.—G. W., æt. 16, male. Localised pain in region of appendix; 3rd day of illness admitted to a medical ward.

	Temp.	Pulse.	Resp.	Leucocytes.
Sept. 5th	99·6	84	24	11840
6th	100	84	20	15600
7th	100	80	24	17760
8th	101	96	24	23120
9th	98·6	80	24	23440

Operation on this day revealed an abscess containing several ounces of fœtid pus, with a loose sloughed off appendix.

10th	98·6	—	—	24960
11th	98·6	—	—	15920
12th	98·6	—	—	11200
14th	98·6	—	—	11520
17th	98·6	—	—	9040
22nd	98·6	—	—	8400

Recovery without interruption. This case is of special interest. On admission there certainly were no local signs of



suppuration, and it was confidently regarded by the physician in charge as a case of catarrhal appendicitis. Later, a surgeon was asked to look at the case, and he, taking all the evidence in favour of suppuration into consideration, decided to operate. A better example of what is called advancing leucocytosis could not exist; it is of interest to compare it with the pulse and temperature. The after-treatment was uneventful, and the patient left hospital

a few days after my last count was taken.

12.—G. C., æt. 21, male. The only local sign is slight tenderness over the appendix. 6th day of disease.

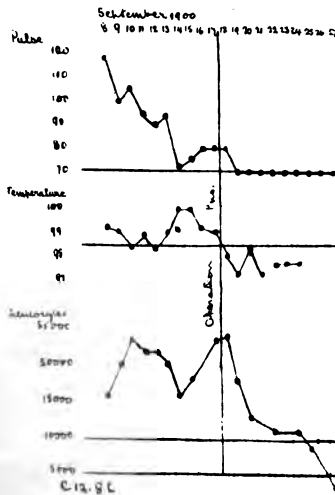
	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 8th, 1900	99·4	116	24	16960

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 9th	99	100	24	20400
10th	98.6	104	24	23920
11th	99.4	88	22	21680
12th	98.6	84	20	21200
13th	99.4	88	20	19260
14th	100	68	22	16800
15th	100	76	24	18720
17th	99.6	84	28	23120

Operation, performed after the last count was taken, revealed a large abscess containing five or six ounces of pus, situated behind the cæcum, reaching as high as the right kidney. Aërobic cultures gave a pure growth of bacillus coli. Anæsthetic—Gas and ether.

18th	99.4	84	20	24000
19th	98.4	72	20	18400
20th	97.4	72	18	13120
21st	98.4	72	20	10880
22nd	97.6	78	24	12800
24th	98	72	20	12460
25th	98	72	20	9840
27th	98	72	20	4640

Discharged well.



This case was one of great difficulty. The surgeon, a man of great authority upon this subject, could not satisfy himself that pus was present. The pulse rate and temperature afford very little assistance. The abscess was deeply seated, giving rise to no local signs beyond slight local tenderness. The leucocyte curve is very definite, well high stagnant, explained probably by the fact that the abscess was well walled off by adhesions. His post-

operative progress was very satisfactory, taking into consideration the depth of the abscess, and the difficulty often experienced in obtaining free drainage.

13.—H. Y., æt. 21, male. Local signs of suppuration present

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 18th, 1900	99·2	96	24	13600

Operation, same evening, revealed an adherent abscess containing one ounce of pus; appendix sloughed off. Anæsthetic—Chloroform.

Sept. 19th	100·4	68	28	20860
20th	98·6	68	28	13440
21st	98·6	80	32	7120
22nd	99·4	84	24	13360

Pent-up discharge.

23rd	100·4	80	24	7120
24th	100·2	68	20	11520

Pent-up discharge in superficial pockets of wound.

26th	99	—	—	15600
28th	98·6	—	—	11200
Oct. 1st	98·6	—	—	12160
5th	98·6	—	—	11840
15th	98·6	—	—	3320

The interest of this case lies in his after-treatment. He drained well for a few days, and his leucocyte count touched normal on the third day after operation, a condition that has occurred in nearly all my cases of loose gangrenous appendices. After this point, however, we meet with a series of rises and falls in the leucocyte curve. On two occasions pent-up discharge was sufficient to account for the slight leucocytosis. After September 24th, I could discover no evident cause for such unusually high counts, and began to suspect a fresh pyogenic accumulation. On October 8th, a plug of iodoform gauze was fished up from the bottom of the wound. This gauze, which had been forgotten owing to a change of house

surgeons, must have been in the wound at least two weeks, and is a sufficient reason to explain the fluctuating leucocyte curve.

14.—H. M., æt. 24, male. Well-marked local signs of suppuration.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 21st, 1900	101·8	100	28	23120

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles	88·4
Small lymphocytes - - - -	7·2
Large lymphocytes - - - -	3·6
Polynuclear coarsely granular oxyphiles	·8

Operation performed on the same evening revealed a large abscess containing eight or nine ounces of foetid pus from which a pure aerobic growth of bacillus coli was obtained. Anæsthetic—Ether.

Sept. 22nd	99·6	96	26	20560
23rd	98	72	24	12800
24th	98	72	22	14800
25th	98	70	22	16960
26th	98	72	22	16800
27th	98	70	22	16800
29th	98	68	22	21040

30th. As the cavity was draining so badly, the surgeon reinserted a drainage tube, the first tube having been dispensed with on Sept. 24th.

Oct. 1st	98·6	—	—	16240
3rd	98	—	—	17120
5th	98	—	—	7440
9th	98	—	—	7440

Discharged healed and well a day or two after the last count was taken. This case did not drain freely. The pulse and temperature remained normal from Sept. 23rd, in contrast to the

leucocyte numeral, which kept high, due no doubt to the imperfect drainage.

15.—M. L., æt. 17, male. Localised tenderness; small lump to be felt.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 29th	101'2	128	38	19040

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles	93.6
Small lymphocytes - - - -	3.8
Large lymphocytes - - - -	2
Transitional cells - - - -	.6

Operation same day revealed a localised abscess containing about one ounce of foetid pus, which on aërobic cultivation gave a pure growth of bacillus coli. Anæsthetic—Ether.

Sept. 30th	101'2	120	32	14320
Oct. 1st	100'6	116	28	8080
3rd	99	76	24	10000
15th	98'6	76	24	10480
19th	100	—	—	7760

Healed on October 19th. This patient made a very excellent recovery.

16.—L. P., æt. 24, male. Slight pain in right iliac fossa; no tenderness; no tumour to be palpated

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 18th	99	101	28	24000

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles -	84.8
Small lymphocytes - - - -	7.8
Large lymphocytes - - - -	4.6
Transitional cells - - - -	2.4
Polynuclear coarsely granular oxyphiles -	.4

Operation on the same evening revealed an abscess containing one ounce of pus, from which by aërobic cultivation a pure growth of bacillus coli was obtained.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 19th	100·4	116	24	23120
20th	100	96	24	21140
21st	101	108	36	11520
22nd	99·2	96	24	20560

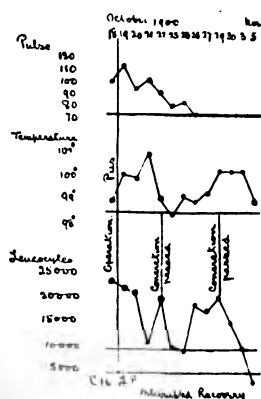
Upon this day a large fæcal concretion was passed through the wound.

23rd	98·4	84	20	10560
24th	99·2	88	20	9040
26th	99	80	20	18080
27th	99·4	—	—	16800
29th	100·4	—	—	20560

Another large fæcal concretion was passed through the wound.

30th	100·4	—	—	14240
Nov. 3rd	100·4	—	—	10880
5th	99	—	—	4640

This case was generally regarded as one of catarrhal appendicitis. It is of interest to observe the temperature pulse and



leucocyte estimate in this case. A very definite leucocytosis, associated with a rapid pulse, is strong evidence against a simple catarrhal appendicitis. The special feature of this case however is the post-operative progress, so clearly portrayed in the accompanying chart. It suggests imperfect drainage, but I think that the chief factor in explaining the fluctuating curves was the passage of two fæcal concretions which had in all probability been lying in

the bottom of the wound for some time. Such concretions must form a fruitful nidus for pyogenic organisms, and their consequent toxins. After the second concretion was passed his career was uneventful, and the temperature did not rise

above normal after Nov. 5th. He was discharged healed and well within a few days of the last count.

17.—W. G., æt. 12, male. Pain and tenderness in region of appendix; slight resistance; no definite tumour.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 19th, 1900	101	96	20	13280

Differential count was as follows:—

	Per cent.
Polynuclear finely granular oxyphiles -	80·6
Small lymphocytes - - - -	14
Large lymphocytes - - - -	4
Mast cells - - - -	·6
Transitional cells - - - -	·4
Polynuclear coarsely granular oxyphiles -	·4
Oct. 20th	99 100 20 12160
21st	98 90 26 17440

Operation, performed after count, revealed a localised abscess.

Anæsthetic—A.C.E. mixture.

23rd	101	116	32	16800
24th	98	108	28	16240
26th	97	96	28	7120
31st	101	112	22	24000
Nov. 1st	100	120	22	20000

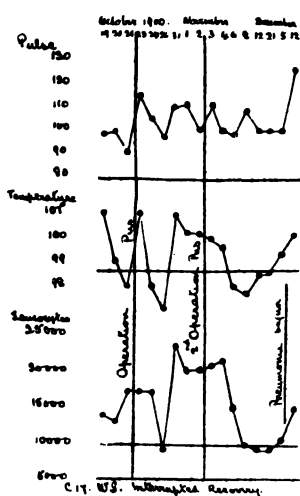
2nd Abdomen again opened; a large abscess was found behind the hepatic flexure, and drained through the right loin. Anæsthetic—Ether.

3rd	100·2	100	28	20560
4th	99·6	120	32	22800
6th	98	100	26	14640
8th	97·6	98	22	10880
12th	98·4	112	22	8080
21st	98·8	100	24	8400

At this stage the wound was practically healed over, and the boy was running about the wards.

Dec. 5th	99·4	100	28	11640
12th	100·4	120	32	16240

Between the date of December 4th and that of December 12th, the boy passed through an attack of acute lobar pneumonia with daily temperatures of 104° . This case was one of exceptional



interest, and I regret very much that I was unable to record his leucocyte value from day to day. After the first operation he seemed to make good progress, as shown by the temperature and leucocytes, which touched their normal value on the third day. For five days I did not examine the patient, then I discovered a very definite leucocytosis. This, of course, suggested a fresh abscess or bad drainage, and this was strengthened by the appearance of pain in the right hypochondriac region. The

surgeon performed laparotomy again, and discovered a large abscess behind the hepatic flexure of the colon. This abscess drained well. A day or two previous to his intended discharge from hospital, he was again laid up, this time with pneumonia. He commenced to complain on December 4th; his crisis was on December 10th. The leucocyte count taken on December 5th indicates a degree upon the upward rise of the pneumonic wave, and that taken on December 12th was no doubt part of the resolution fall.

The little fellow to everyone's delight pulled through all his troubles, and made a good recovery. The accompanying chart will give a very accurate reflection of the chequered character of this instructive case.

18.—W. H., æt. 16, male. Well-marked local signs of supuration.

	Temp.	Pulse.	Resp.	Leucocytes.
Oct. 19th, 1900	102	110	20	16080

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles	95
Small lymphocytes - - - -	1·8
Large lymphocytes - - - -	1·8
Transitional cells - - - -	·6
Polynuclear coarsely granular oxyphiles	·6
Mast cells - - - - -	·2

	Temp.	Pulse.	Resp.	Leucocytes.
Oct. 20th	101	88	28	14000
21st	Operation revealed a localised abscess with a loose gangrenous appendix. Anæsthetic—Gas and ether.			
22nd	100	100	20	18400
23rd	101	104	24	14960
24th	100	120	28	19680
26th	99	120	28	12800
29th	98·4	84	22	4800
31st	98·4	80	22	4800

Excellent recovery ; small granulating wound on October 31st.

This case discharged very freely for several days after the operation, which I think was sufficient to account for his somewhat fitful leucocyte curve.

19.—C. P., æt. 16, male. Abscess with definite fluctuation.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 19th, 1900	101·6	88	24	16240

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles -	90·8
Small lymphocytes - - - -	3·6
Large lymphocytes - - - -	1·6
Polynuclear coarsely granular oxyphiles -	2·2
Transitional cells - - - - -	1
Mast cells - - - - -	·8

Oct. 20th Operation performed ; abscess containing several ounces of pus with a loose gangrenous appendix evacuated. Anæsthetic—Chloroform.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 20th	100·6	96	32	18720
21st	98·6	68	24	16240
22nd	98	64	20	12240
23rd	97·2	60	20	6240
25th	98	60	16	9360

This case, which gave no difficulty in diagnosis or treatment, in so much that the abscess was superficial, and that nature had performed an excellent appendectomy, presents a very unusual number of eosinophiles.

20.—E. B., æt. 20, male.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Nov. 4th, 1900	4	—	—	29680

Differential count as follows :—

	Per cent.
Poly nuclear finely granular oxyphiles	89
Small lymphocytes	4·4
Large lymphocytes	4·2
Transitional cells	1
Polynuclear coarsely granular oxyphiles	1
Mast cells	·4

Operation performed, after count was taken, and revealed an abscess containing several ounces of fœtid pus, from which a pure aerobic growth of bacillus coli was obtained.

No further counts were taken from this case. It made a good recovery.

21.—J. T., æt. 66, male. Tender lump in right iliac fossa; has been in hospital several days.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 13th, 1900	98	72	18	12960

Differential count as follows :—

	Per cent.
Polynuclear finely granular oxyphiles	74·8
Small lymphocytes	14·4
Large lymphocytes	6·8
Transitional cells	2·4
Polynuclear coarsely granular oxyphiles	1·2
Mast cells	·4

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 16th	98	70	20	9360
17th	98	66	22	5760

Operation revealed a mass of adhesions with a little granulation tissue in the middle, which on aërobic cultivation gave a copious growth of bacterium coli, with a few colonies of staphylococcus pyogenes albus. No actual pus was visible.

Oct. 18th	99	88	22	10880
19th	98	80	22	14160
20th	99	70	20	10240
22nd	101	88	24	12480
24th	98·2	76	20	7440
26th	98·2	—	—	10560
31st	98·4	—	—	7440

The wound suppurated and the old man's recuperative power was comparatively speaking low. The slight leucocytoses on October 13th gave a normal differential count. In the light of facts revealed at the operation, I think one might reasonably conclude that this leucocytosis was of an inflammatory nature, due to the smouldering embers of an old pyogenic focus which was gradually being extinguished. The patient recovered and was discharged well.

22.—M. H., æt. 16, female. The only local symptom was pain in the abdomen; there was no tenderness or swelling to be elicited by palpation. Admitted to a medical ward.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Dec. 13th	101·8	120	44	16240
14th	101·6	140	32	23360
15th	102·2	152	36	21840
16th	101·4	125	36	22500
17th	101	125	36	23120

The patient at this stage began to have slight tenderness in the right iliac fossa. A surgeon was asked to see the case, but he did not think that suppuration had been established.

18th	100	128	28	27040
19th	99	120	28	25000

Differential count upon this day as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	89
Small lymphocytes	6.2
Large lymphocytes	3.8
Transitional cells	1

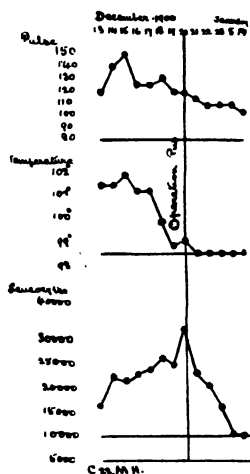
	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Dec. 20th	99	118	—	33120

Operation upon this day revealed a large abscess containing several ounces of fœtid pus, situated behind the cæcum. Anæsthetic—A.C.E. mixture.

21st	99.2	116	—	24680
22nd	98.6	115	—	23120
23rd	98.6	118	—	19000
Jan. 5th, 1901	98.6	112	—	12460

On January 12th the drainage tube which had been left out several days was reinserted since the wound continued to discharge freely.

Jan. 14th	98.6	107	24	12480
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On Jan. 18th a fæcal concretion was passed through the wound. As no further count was made after Jan. 14th there is no means of knowing when her leucocyte numeral touched the normal line. The patient left hospital on Jan. 27th with still a little discharge from the wound.

This case is one of unusual interest, as the accompanying chart fully bears out. Local signs of suppuration were absent, the patient was admitted to a medical ward, yet when seen by a surgeon, five days after admission, it was regarded as one of catarrhal appendicitis. The temperature and pulse were more suggestive of suppuration on admission

than just prior to operation. The leucocyte count on the other hand advanced steadily until the day of operation. That delay in arriving at a diagnosis under conditions like these is highly dangerous there can be no doubt. A patient with such a large abscess is living on the edge of a precipice, a general peritonitis might occur at any moment owing to a rupture or leak in the abscess wall.

The post-operative progress, though satisfactory for a few days, became complicated later by fæcal concretions. My leucocyte record in this part of her hospital life was not very regular, and I have little doubt that it would have been of a fluctuating and fitful character, due in all probability to a fæcal concretion at the bottom of the sinus, which maintained suppuration and prevented healing of the wound.

23.—H. W., æt. 41, male. Has been ill in bed eight weeks. A large tender mass is to be felt in the right iliac fossa, in which distinct fluctuation can be felt.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 29th, 1900	100	80	20	9360

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	61·2
Small lymphocytes	35
Large lymphocytes	2·8
Transitional cells	·8
Polynuclear coarsely granular oxyphiles	·2

June 30th	98·6	76	20	7440
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July 1st Operation revealed an abscess containing several ounces of pus, surrounded by dense adhesions. Anæsthetic—Ether.

2nd	98·6	—	—	6400
4th	98·6	—	—	6960
10th	98·6	—	—	5600

This is the one exception to my otherwise positive record of constant leucocytosis in suppurative appendicitis. The leucocyte counts upon the two days preceding operation were normal,

and even after operation there is no elevation as is so frequently the case. This operation practically consisted in making an incision through the skin and putting a drainage tube into the large abscess cavity, which was quite superficial. The anæsthetic was ether. The pus was not examined bacteriologically much to my regret, being unable to attend the operation in person, I had to depend upon the house surgeon, who unfortunately forgot to save me a specimen. It is to some extent a matter of speculation to attempt to explain this one anomalous case. There was a very chronic history, pain and tenderness for eight weeks, so that his abscess was by no means of recent formation. The dense fibrous walls formed a very effective barrier to the absorption of toxins. There is of course a remote possibility that this was a tuberculous condition, and had I been present at the operation I could have satisfied myself as to whether septic organisms were present or not. It is also possible that the organisms in this abscess, which though active in the early part of its existence, had lost their vitality, and so gave off little or no toxin at the time of my leucocyte examinations. The differential count of this case brings out a well marked increase in the small lymphocytes, a condition which is very unusual in any suppuration, except a tubercular one.

II. APPENDICITIS WITH GENERAL PERITONITIS.

24.—J. L., æt. 15, male. Ill five days; abdomen distended and immobile; considerable collapse.

	Temp.	Pulse.	Resp.	Leucocytes.
Aug. 29th, 1900	99·6	120	36	29560

Operation; incision made into right flank, and tube inserted.
Anæsthetic—Ether.

Aug. 30th	103	128	28	28880
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Died on August 31st.

Autopsy revealed a perforated appendix, general suppurative peritonitis with large amounts of pus in the pelvis and left loin.

This patient was far spent on admission to hospital. That

he was making a vigorous fight against the violent toxæmia is shown by his well marked leucocytosis.

It occurred to me that, given a bad case of general peritonitis with considerable leucocytic reaction, it might be a strong indication to adopt a more perfect method of drainage than was adopted in this case. It is reasonable, I think, to suppose that in such a patient, given flushing or sponging together with free drainage in both flanks and middle line in order to remove as much toxic product as possible, we would give him a better chance of bringing his plucky fight against such a violent onslaught to a successful issue. Past experience has taught us that, in severe general peritonitis giving a normal or subnormal leucocyte count, the prognosis is of the worst. The dose of toxin is practically a lethal one from the outset, and death generally supervenes within two or three days. In such a case we cannot help realising that whatever is done the result is a foregone conclusion; whilst in cases giving a more vigorous reaction and a well marked leucocytosis, there is I think much more encouragement for making the operative measures as thorough as the patient will possibly stand. The fact that this patient lived so long after his operation, which could not be of much value to him, is in keeping with his vigorous reaction.

25—A. W., æt. 13, male. Severe general peritonitis; considerable collapse.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 31st, 1900	98·6	98	32	24000
Operation; abdomen opened in middle line and right flank; intestines sponged; glass drainage tube inserted into pelvis. Anæsthetic—Chloroform.				
Sept. 1st	100·4	122	26	27760
2nd	98·6	128	28	31840
3rd	99·8	128	20	39040
4th	100	130	28	44800
5th	101·6	132	32	28400
Died on Sept. 5th, two hours after my last count.				

Autopsy revealed a swollen inflamed appendix; general suppurative appendicitis with about half-a-pint of pus in left loin.

This case was very ill, the collapse was not so profound as in case 24.

The treatment in this case was more vigorous, and although ultimately fatal, the progress was distinctly more encouraging.

In view of the steadily increasing count after operation, suggestive of further mischief, and the fact that the boy's general condition was good, I ventured to suggest a further operation in the left flank.

It is to be observed that the last leucocyte estimation made just before death is much lower than on the previous day; this is in all probability due to a rapidly falling vitality. I have not during my investigations met with any increased leucocytosis during the moribund state preceding death where any degree of leucocytosis has previously existed.

26.—X. W., æt. 21, male. Severe general peritonitis; marked collapse.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 11th, 1900	100·2	142	36	24300

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	96
Small lymphocytes	2·8
Large lymphocytes	·6
Transitional cells	·4
Polynuclear coarsely granular oxyphiles	·2

Operation; abdomen opened, flushed out, and drained in the middle line. Cultivations from general peritoneum gave a pure aerobic growth of bacterium coli. Anæsthetic—Chloroform, A.C.E. mixture.

Oct. 12th	100·4	168	44	25040
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Died on October 13th.

Autopsy revealed an acute suppurative peritonitis due to appendicitis with perforation.

III. CATARRHAL APPENDICITIS.

27.—R. A., æt. 43, male. Acute attack; pain; tender lump.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 12th	98	64	22	8560
13th	Operation; appendix excised; adhesions; no pus present. Anæsthetic—Ether.			
14th	97·5	72	20	8880
15th	98	72	20	9840
16th	98·6	64	22	9840
18th	98·6	—	—	10240
19th	98·6	—	—	10240
20th	98·6	—	—	7120
22nd	98·6	—	—	7160

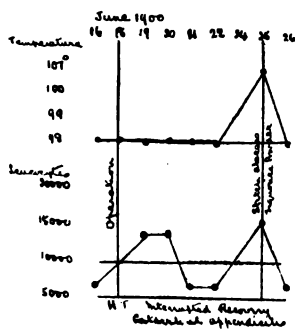
Healed by primary union.

28.—H. T., æt. 11, male. Acute attack.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 16th	98	—	—	6640
18th	Operation; appendix excised; no pus. Anæsthetic—Chloroform.			
19th	98·6	—	—	13120
20th	98·6	—	—	13680
21st	98·6	—	—	6240
22nd	98·6	—	—	7600
25th	101	—	—	15520
26th	98·6	—	—	7200
28th	98·6	—	—	10000

Apart from the absence of any leucocytosis prior to operation, this case presents features of some interest. Chloroform was

the anæsthetic, and we notice a distinct increase in the leucocytes for two days after operation. Then on June 25th the temperature and leucocyte curves take a sudden rise; this was due, firstly, to a dose of liquorice powder given on June 24th, which produced a smart purge; secondly and chiefly to a small stitch abscess which was



noticed on June 25th. After prompt treatment the leucocyte curve fell to normal.

29.—W. W., æt. 54, male. Second attack; ill nine days; tender swelling in right iliac fossa. Regarded by the surgeon as a localised abscess.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 1st	98	72	24	8880
„ 4th	98	76	24	10400

Differential count as follows:—

	Per cent.
Polynuclear finely granular oxyphiles	- 79·2
Small lymphocytes	- - - 14
Large lymphocytes	- - - 4
Polynuclear coarsely granular oxyphiles	- 1·4
Transitional cells	- - - 1·4

The patient steadfastly refused to have any operation done. An ice bag was put over his tender lump, which disappeared entirely in a few days. The differential count is approximately that of healthy blood.

30.—J. F., æt. 40, male. Acute attack.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 26th, 1900	100	76	22	10000

Operation; appendix excised; no suppuration. Anæsthetic

—Ether and chloroform.

28th	99	72	24	15280
29th	99	70	22	9360
30th	98	70	22	10080
31st	99	—	—	10560
Sept 1st	98·6	—	—	6560
2nd	98·6	—	—	5920

Healed by primary union.

31.—W. K., æt. 25, male. Acute attack; fifth relapse.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 12th	99·8	72	22	9360
13th	98·6	72	22	10880
15th	98·4	68	22	6560

17th Operation; appendix excised; no pus present.

Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 18th	98·6	72	26	10660
19th	98·6	72	24	8720
20th	98·6	68	20	7760
22nd	99	60	20	9360

Healed by primary union.

32.—H. B., æt. 48, male. Acute attack, with marked local tenderness and rigidity.

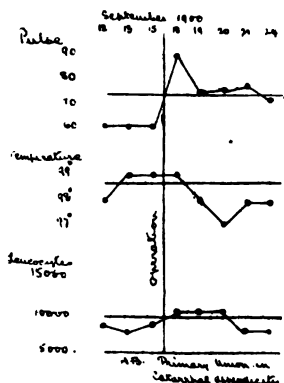
	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 12th	98	68	22	9520
13th	99	64	18	7120
15th	99	64	20	9520

17th Operation; appendix stenosed, cultivations from the interior of which gave a pure aerobic growth of bacterium coli. Anæsthetic—Gas, ether.

18th	99	90	24	11560
19th	98	76	18	11520
20th	97	76	20	11600
21st	98	80	20	8560
24th	98	72	20	8720

The wound healed by primary union.

There was considerable doubt clinically whether this case was a suppurative one or not, owing to the intensity of his local signs. The accompanying chart is fairly typical of the leucocytic condition met with in catarrhal appendicitis.



33.—P. C., æt. 29, female. Diagnosed as appendicitis; fourth attack; pain, tenderness, and a swelling in right iliac fossa.

	Temp.	Pulse.	Resp.	Leucocytes.
Oct. 12th	98	—	—	10040
13th	97	—	—	9680
15th	Operation revealed a small ovarian tumour with pedicle, which had become somewhat twisted and caused the so-called attacks of appendicitis. Tumour removed. Anæsthetic—Gas, ether.			
16th	98·6	—	—	16240
17th	99·4	—	—	7120
18th	98·6	—	—	7760

Healed by primary union.

This case is merely inserted because of the mistake made in diagnosis, and the leucocyte curve associated with such a degree of twisted ovarian pedicle.

CONCLUSIONS.

At the outset let me say that I do not for one moment wish to ignore the importance attached by certain hæmatologists to the hæmoglobin, red corpuscles and colour index in appendicitis. Under certain conditions it is possible that such information could be of value to the clinician, yet by far the most important feature of the blood chart is brought out by the leucocytic reaction. Dr. DaCosta has suggested that whenever the percentage of hæmoglobin falls below 40 in appendicitis, it might be better to delay the operation in order to first treat the anæmia. Needless to say that such a method of procedure is not only unscientific in principle, but also fraught with considerable danger to the life of the patient.

The following conclusions are based entirely upon the above cases, all of which were investigated by myself; this I venture to regard as of some significance, simply because the results of one observer, provided they are sufficiently numerous, are more universal and less liable to technical errors than a similar number of results by several observers. In many of the cases of suppurative appendicitis it was possible to make several examinations prior to the operation, and it is not difficult to understand

that several counts upon consecutive days are of more value than a single one. It is probable, for example, that the journey to hospital, of patients suffering from appendicitis, whether suppurative or catarrhal, is sufficient to unduly increase the leucocyte numeral so that a single count upon this day might be misleading.

The above results conclusively prove that in the great majority of cases of suppurative appendicitis, there is a very definite leucocytosis.

Briefly, these twenty-three cases of suppuration show the following analysis:—

			Per c.m.	Per c.m.
4 per cent.	gave a leucocyte count below 10000			
16	"	"	between 12000 and 15000	
40	"	"	" 15000	" 20000
36	"	"	" 20000	" 30000
4	"	"	" 30000	" 40000

Thus 80 per cent of all cases give a leucocytosis above 15000 per c.m., and 40 per cent. above 20000 per c.m. The maximum count recorded is 33160 per c.m., the minimum 9360 per c.m., and the average of all the twenty-three cases is 19250 per c.m., or more than double the average leucocyte count obtained in my cases of catarrhal or interstitial appendicitis.

Although this analysis suggests marked optimism concerning the value of leucocytosis in the diagnosis of suppurative appendicitis, I must point out that even a large abscess, with dense adhesions limiting it, may be accompanied by a normal leucocyte numeral. On the other hand, it is certain that advancing leucocytosis, as detected by several estimations, almost always means an advancing local inflammation (suppuration or peritonitis), which is not curable by rest in bed, and which may not be suggested by the pulse rate, heat value, or local conditions present.

My work upon leucocytosis has led me to the opinion that the leucocyte curve is a more delicate indicator of underlying pathological conditions in appendicitis, than either the pulse or the

temperature, and is equal in value to that of local signs of inflammation.

The degree of leucocytosis cannot be relied upon to furnish correct information as to the amount of pus present, though generally a small abscess produces a slight leucocytic reaction, and a moderately sized abscess a still greater reaction. The degree of leucocytic increase is regulated probably by the amount of toxin given out by the local lesion, and this must depend, not only upon the degree of resistance to absorption as regulated by fibrous adhesions, but also upon the virulence of the special organism. Children have almost certainly a more sensitive leucocytic reaction than adults.

In none of my cases of suppurative appendicitis was the virulence of the inflammatory attack sufficiently great to paralyse the leucocytic response, and thus produce a normal or subnormal count, though it is always necessary to keep this possibility in mind.

The opening of an abscess in the region is occasionally followed by a maintained or increased leucocytosis lasting for a day or two; this especially occurs if the absorbing surface has been increased or disturbed by manipulation, and as I shall show later, is more common after chloroform than after ether anæsthesia. If the abscess drains well, the leucocytosis disappears within a few days of the operation, and does not reappear. Should the drainage be imperfect, giving rise to pent up discharge, the leucocyte curve may rise again, and continue to fluctuate according to the amount of retained products. The formation of a fresh abscess is accompanied by a fresh leucocytosis, which will continue until the pus is evacuated.

A piece of iodoform gauze, or a fæcal concretion lying at the bottom of a sinus is sufficient to prevent the leucocyte curve settling to its normal standard. I am satisfied that regular leucocyte estimations can be of signal assistance in giving information concerning the post-operative progress of suppurative appendicitis. Should the leucocytosis not disappear within a

few days of the operation, a careful examination should be made of the local conditions present, in order to determine the cause of that delay.

The special leucocyte which undergoes increase is the polynuclear finely granular oxyphiles, and this occurs chiefly at the expense of the lymphocytes, to a less extent the polynuclear coarsely granular oxyphile and transitional cells.

In my three cases of appendicitis with general peritonitis, there was a well-marked leucocytosis present, the average count being 25950 per c.m., the whole of this increase consisting of polynuclear finely granular oxyphiles.

What has been said in reference to the value of leucocyte estimations in the post-operative progress of localised abscess applies equally to appendicitis with general peritonitis. Although a definite leucocytosis in general peritonitis does not necessarily indicate a good prognosis, it, at least, points to a vigorous reaction on the part of the patient, and I would suggest that, under such conditions, the most thorough surgical measures possible should be adopted. It is not difficult to understand that a thorough removal of the toxic products, during such a vigorous fight, is more likely to be attended by success, than when the constitutional reaction is already paralysed, as indicated by a normal or subnormal count.

As a general rule the leucocytes do not exceed the maximum normal (10000 per c.m.) in catarrhal appendicitis, but that it may occasionally exceed that number there can be no doubt. In two of my six cases there are counts of 10400 per c.m. and 10800 per c.m., the lowest count obtained was 6560 per c.m., and the highest 10800 per c.m.; the average of all the cases being 8600 per c.m., which contrasts very strikingly with the average obtained in suppurative appendicitis, or in appendicitis with general peritonitis.

Whenever a case of so-called catarrhal or interstitial inflammation of the appendix gives rise to a definite leucocytosis, I cannot help thinking that there must be some super-added complication to account for it. Serous peritonitis, unlike serous pleurisy,

produces a well-marked leucocytosis, in proof of which I could give several examples, and it is more than likely that in a certain proportion of cases of catarrhal appendicitis, a local peritonitis of this kind is present. The leucocytosis consequent upon a journey to hospital may be explained in this way ; it, however, disappears after a few days' rest in bed, and this can be shown by counts taken on several consecutive days. Copious vomiting or diarrhœa is sufficient to cause an increase of the leucocytes. A stenosed appendix with a dilated and tense distal cavity containing pyogenic organisms is probably another factor in accounting for these few exceptions to the general rule. During wound healing, after appendectomy in catarrhal appendicitis, the leucocyte curve falls to normal on the second day, and does not rise again unless some complication arises, or, in other words, it is identical with the leucocyte curve of a wound healing by primary union.

In reviewing the effect of anæsthesia upon the leucocyte curve of the above mentioned cases, it is necessary to remember that there are correlative and simultaneous forces at work, such as the degree of hæmorrhage, and the effect of manipulation on the inflammatory area. It is, however, possible to make a broad comparison between the influence of ether and that of chloroform. Of the cases showing a definite leucocytosis prior to operation, seventeen were anæsthetised by ether, and five by chloroform. Of the seventeen ether cases, the average leucocyte count prior to operation was 18500 per c.m., whereas the average leucocyte count on the day following operation was 16500 per c.m., thus showing an average fall of 2000 per c.m. In the five chloroform cases, the average count prior to operation was 19000 per c.m., whereas the average count on the day following operation was 27000 per c.m., thus showing an average increase of 8000 per c.m. Of the non-suppurative cases, four were anæsthetised by ether and two by chloroform. The average count of the four ether cases prior to operation was 8000 per c.m., whereas the average count on the day following operation was 11000 per c.m.,

thus showing an average rise of 3000 per c.m. Of the two chloroform cases, the average count prior to operation was 8000 per c.m., the average after operation being 14000 per c.m., thus showing an average rise of 6000 per c.m. From such data it is obvious that chloroform tends to produce a post-operative leucocytosis to a much greater extent than ether.

In conclusion, it is surely evident that there is valuable information to be obtained from a careful examination of the leucocytes in appendicitis; and although its reading cannot be regarded as pathognomonic of any one condition common to the disease, if considered in conjunction with that of other symptoms and physical signs, it will prove a valuable adjunct to the clinical picture of this important malady.

(To be continued).

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH,

Session 1901-1902.

The Fifth Ordinary Meeting of the Session was held in the Birmingham Medical Institute, on February 13th, 1902, Dr. E. MALINS, President, and later Dr. R. Saundby, being in the Chair.

Forty-one members were present.

Confirmation of Minutes.—The Minutes of the previous meeting were read, confirmed, and signed.

Election of Members.—The following members of the Association were elected members of the Branch, viz. :—W. E. Alldridge, 341, Dudley road, Birmingham; T. H. Galbraith, M.B., 1, George street, Wolverhampton; James Miller, M.B., 71, Stanmore road, Edgbaston; James Neal, 610, Coventry road,

Birmingham; Thomas Salt, Washwood Heath, Birmingham; E. T. Walker, 362, Moseley road, Birmingham.

Perforated Gastric Ulcer.—Mr. George Heaton showed a girl, æt. 21, on whom he had operated successfully for a perforated Gastric Ulcer. She had had symptoms of gastric ulcer for $1\frac{1}{2}$ years previously. On November 4th, 1901, she was suddenly seized with violent abdominal pain and collapse with vomiting. Peritonitis quickly set in. Abdominal section was performed twenty-seven hours after the actual perforation. The ulcer was a large one and situated close to the pylorus. The lower peritoneal sac contained a considerable quantity of fluid, and there was much lymph around the stomach and liver. The perforation was closed with a double row of Lembert sutures, and to strengthen these the falciform ligament of the liver was divided and its lower half fixed to the side of the perforation by a few silk sutures. The patient made a good recovery. Since the operation she had gained twenty-eight pounds in weight and had entirely lost all her digestive troubles.

Mr. Heaton remarked that this case was the fifth case of perforated gastric ulcer on which he had operated. Two cases had recovered, the remaining three had died. Prompt diagnosis and immediate surgical interference would in the future lessen the mortality of this extremely fatal complication of gastric ulcer.

Nephrectomy for huge Pyonephrosis due to the impaction of a small Calculus at the upper end of the Ureter.—Mr. Barling showed this specimen removed from a girl, æt. 21, who had suffered from discomfort in her left loin since early childhood. As time went on acute attacks of pain with vomiting and faintness were experienced. In October, 1901, a severe attack of pain occurred in the loin followed by the appearance of a tumour in the front of that region. This became painful and tender and at the time of admission to hospital extended upwards underneath the left costal arch downwards into the left iliac fossa and laterally from the internal margin of the left lumbar region nearly to the middle line in front. The kidney was removed by the oblique lumbar incision, and was found to be a mere lobulated

sac of pus, no renal tissue remaining. Just where ureter and kidney pelvis meet, a small calculus was firmly impacted. An excellent recovery followed the operation.

Nephro-lithotomy for Renal and Ureteral Calculi.—Mr. Barling also showed two calculi removed from a lady, æt. 38, who, when recovering from a hysterectomy performed in London in 1900, suffered from severe pain in the right loin with vomiting and suppression of urine. The urgent symptoms subsided, but since that time there have been similar attacks at intervals, sometimes on the left side, at others on the right, but the latter have been of the greater severity. On November 27th, 1901, there was an intense attack of pain in the right loin with a severe rigor, followed by another rigor on the 29th, and another on the 30th, the temperature ranging from 99° to 104°. When seen on December 4th, there was intense pain and tenderness over the right kidney, which was very much enlarged. T. 101°. P. 108. Urine from 3xx to 3xl.; s.g., about 1.013, containing a few pus cells. Operation on December 6th showed the kidney to be very much enlarged, congested and softened; the pelvis was dilated and distended. At a point three inches from its commencement, the ureter was found to be blocked by a calculus, and in manipulating to allow of an incision on to this, the stone slipped away out of the ureter. An incision was then made into the pelvis of the kidney, evacuating some ounces of foetid pus. The lower end of the kidney was found to be much dilated and its substance atrophied. In the dilated part a small stone, somewhat wedge-shaped, half an inch long and a quarter of an inch at its widest part, was found, evidently the ureteral stone. Another larger stone, an inch by half an inch, was also found in the same part of the organ. An excellent recovery followed the operation, and though at first there was a good deal of pus in the urine, this is now only microscopic in amount.

Functional Word-deafness.—Dr. A. H. Carter showed a woman, æt. 30, suffering from this condition.

Colon Catarrh and Muco-Membranous Colitis.—Dr. T. Stacey

Wilson read a paper on this subject, and showed a series of illustrative specimens of intestinal mucus. The following is a synopsis of the paper :—

Morbid conditions of Colon referred to, viz.—“Simple Catarrh,” “Muco-Membranous Colitis,” “Membranous Colitis,” “Mucous Colic,” “Typhlitis.” Symptoms of these as usually described. Relationship of these to one another. Classification of cases of Colon Catarrh as suggested by the author’s cases :—

1. Simple acute general Catarrh of the Colon—illustrative cases.

2. Sub acute and chronic Catarrh, mainly involving the transverse Colon.

3. Acute and sub-acute Catarrh, mainly involving the Cæcum and ascending Colon correctly designated Typhlitis ; symptoms and physical signs of this type ; its relationship to Appendicitis. Illustrative cases.

4. Chronic Catarrh mainly involving the Cæcum and ascending Colon.

Prognosis.

Treatment.—Dietetic, hygienic, medical.

Dr. Saundby, Mr. Deanesly, Dr. Kauffmann, Dr. Carter, and Mr. Heaton took part in the discussion, and Dr. Stacey Wilson replied.

MIDLAND MEDICAL SOCIETY.

The Sixth Ordinary Meeting was held on Wednesday evening, February 5th, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the chair.

The following were elected members of the Society: Miss Caroline O'Connor, M.B., Ch.B. Edin., and Messrs. Thomas Wolverson, M.R.C.S., L.R.C.P., and James Miller, B.Sc., M.B., Ch.B. Edin.

Spina Bifida.—Mr. Gamgee showed a patient, aged 14 months, upon whom he had operated for spina bifida two years ago. The tumour was in the lumbar region, and was the size

of a Tangerine orange. The lower end of the spinal cord and the nerves were contained in the sac, and were adherent to the wall. The sac was opened, and those portions of it to which nerves and cord were not adherent were excised. The cord could not be returned into the spinal canal, and so was laid in the groove in the bottom of the sac, and then, free lateral incisions into the sheaths of the muscles having been made, the two erector spinæ muscles were brought together over the cord by means of silk sutures. A separate row of sutures brought the edges of the skin wound together. The patient was now perfectly well in every way.

Insular Sclerosis.—Dr. Douglas Stanley showed a case of insular sclerosis occurring in a boy, aged 12. The chief symptoms were very marked intention tremor, high-pitched voice, and some lingual paralysis. Nystagmus was present, but there was not great exaggeration of the tendon jerks.

Perforated Duodenal Ulcer.—Mr. Lucas read the notes of a case of perforated duodenal ulcer, which occurred in a young man, aged 20. He was admitted to the General Hospital on December 19th, 1901, at 5-0 p.m., complaining of severe abdominal pain of three hours' duration, and located about the umbilicus. He vomited immediately the pain came on, and again about one hour later. He had complained of "indigestion" for about a year, the pain in the stomach coming on about an hour after meals. No history of hæmatemesis, or other disease or injury. On admission the liver dulness was not impaired, and he only complained of severe pain and tenderness in the abdomen. Pulse, 80; temp., 99·8. At 12-0 midnight, the liver dulness had completely gone, and his general condition was much worse. At 1-0 a.m., the abdomen was opened, free gas escaped, and a perforation was found in the duodenum one inch from the pyloric orifice; the perforation was of the size of a split pea. About 6 ozs. of turbid fluid and flakes of lymph were sponged out of the abdominal cavity. The edges of the ulcer were brought together with a continuous silk suture, and further closed by two layers of interrupted sutures. A drainage tube

was left in the wound, the remainder being closed. The subsequent course of the abdominal condition was in every way satisfactory, but the patient developed broncho-pneumonia and died on Dec. 29th, 1901. *Post-mortem*, there was no peritonitis, except a little lymph forming adhesions about the seat of perforation. The ulcer in the duodenum was soundly closed.

Double Pyosalpinx.—Dr. Purslow showed this specimen which he had removed by abdominal section from a young single woman. The patient when admitted to the Queen's Hospital, dated her illness from an attack of influenza, from which she had suffered twelve months previously; ever since then she had felt pains in the abdomen, and for five months had lost weight and strength, and had noticed a swelling in the abdomen. The tubes were equally enlarged, containing about five ounces of pus in each. The patient made a good recovery and is now at work again. The interest of the case lay in the etiology:—there was no evidence of gonorrhœa, and the hymen was virginal; no signs of tubercle in the lung or elsewhere could be discovered. An examination of the pus was made by Dr. Stanley, pathologist to the Hospital, and he reported that it contained no micro-organisms. Dr. Purslow was driven to the conclusion that the suppuration must have been due to the attack of influenza.

Dr. Douglas Heath read a paper on "Some Types of Eczema and their Treatment."

KIDDERMINSTER MEDICAL SOCIETY.

A meeting of this Society was held at the Kidderminster Infirmary, on Friday, February 7th, Mr. J. LIONEL STRETTON, President, in the Chair.

Cases.—The President showed:—1. A girl, æt. 22, upon whom he had performed excision of the elbow joint for tubercular disease five years ago. The limb remains perfectly strong, with good movements, and she is able to earn her living as a domestic servant.

2. A girl, æt. 22, with a peculiar development of the two last ribs. The 11th came as far forward as the linea semilunaris

on each side, and the 12th within an inch of the same line. There was no discomfort caused by the condition, which was only accidentally discovered by Mr. Stretton.

3. A malignant kidney removed through the loin from a woman, æt. 51.

4. The head of a femur removed by amputation at the hip joint for tubercular disease, from a boy, æt. 17.

5. A malignant mass in the mesentery, with twelve inches of intestine attached, removed from a man, æt. 68. An epithelioma was found in the intestine causing obstruction, and the growth in the mesentery was secondary glandular enlargement.

Mr. W. H. Moore showed:—1. A uterus which he had removed by the intra-vaginal method for malignant disease. Patient made a good recovery.

2. A uterus showing perforation through the anterior wall, the result of attempts that had been made to produce abortion; death followed from suppurative peritonitis.

3. An extra-uterine foetation showing foetus and ruptured "tube;" the foetus was lying in the abdominal cavity, the placenta still *in situ* in the tube, with the cord passing through the opening.

Dr. Evans showed a girl, æt. 15, upon whom he had operated for cancrum oris, by splitting the cheek and scraping away the disease. Patient made a good recovery and there was likely to be little disfigurement.

Mr. A. C. Oldham read a paper on Rheumatism, and a discussion followed.

REVIEWS.

THE MENTAL FUNCTIONS OF THE BRAIN.*

THE author of this work begins by stating that our knowledge of the mental functions of the brain has not made such advances

* The Mental Functions of the Brain. By Bernard Hollander, M.D. (Freiburg), M.R.C.S., L.R.C.P. Lond. London: Grant Richards,

as other branches of medical science. His work therefore aims at "clearing up the mystery" of mental functions, and also at demonstrating their cerebral sites. The writer believes that a different portion of the brain is affected according as the patient suffers from melancholia, mania, or delusions only. The practical outcome of such observations, "if future investigators confirm" them, would be an immense stimulus to brain surgery. It may be seen from this that the author does not agree with those who view pathological changes in the brain as affecting extensive portions of the cortex. The writer then proceeds to describe the pathology of melancholia, locating the lesion or lesions in the angular and supra-marginal gyri. "Irascible insanity" and "mania furiosa" are dependent on lesions of the middle portion of the cortex of the temporal lobe (p. 119). In like manner the various forms of mental disorders and certain diseases, such as epilepsy, are in the opinion of the author due to local anatomical changes. In chapter vii. the cerebellum is described as the seat of sexual instincts, and curious deductions are drawn from the size and conformation of the portion of the skull between the ears—a theory at one time very popular, but which we hardly expected to meet to-day as a serious proposition. We feel obliged to give some of the author's statements in reference to cerebellar ataxy. He says: "What relation is there discoverable between the successive stages of development of the cerebellum, from the moment of birth to the twentieth or thirtieth year, and the regularity of the locomotive movements? Are the movements of the man between twenty and thirty years more regular than those of the boy and girl from five to fifteen? Has it ever been proved by observation that individuals possessing a large cerebellum manifest more regular movements than persons in whom it is small? A man possessing a large cerebellum can be extremely awkward. . . . The falling backward in lesions of the cerebellum can at most prove an influence on the exterior muscles of the head, spine, pelvis—just those muscles that enter largely into activity in the sexual act. But it cannot be shown that the cerebellum exerts any influence, for instance, on manual dexterity.

"I am aware that cerebellar ataxy differs from locomotor ataxy. If I advocate, nevertheless, that there exists a possible connection between the two, it is simply by way of suggestion for future observers.

"First, locomotor ataxy can in most, if not all, cases be traced to syphilis, which means that promiscuous and possibly excessive gratification has preceded excesses *in venere* can be often proved. Hence, why not look to the cerebellum for the lesion as well as the cord."

This is a specimen of the kind of reasoning that prevails throughout the whole work.

In chapter ix., the subject of Phrenology is taken up and carried through the remainder of the book. The writer has certainly shown vast industry in looking up the literature of the subject and quotes freely from a great number of writers, especially Gall, in support of phrenology. When, however, some damaging statement is made by writers such as Maudsley, Bastian and others, we are treated to the most slashing sarcasm. At pages 435-6, under the heading "Mental Science, as taught by a London Physician, an M.D. (Gold Medallist)," certain statements made by this gentleman (who would surely have had no objection to be slain under his full name in rather good company) are quoted by the author, and characterised as "fairy tales, which may be told with impunity to a lay audience." Yet the writer is most sensitive to what he calls "worn out wit or sarcasm," when directed against "the great cause I am upholding," and such is his jealousy for the cause that he "replies to modern opponents with more civility than they have employed and they deserve."

It appears to us that Dr. Hollander has got into deep water. Neurologists all know, and freely admit, that certain broad principles in cranial conformation are associated with mental characteristics. The microcephalic is a well recognised type. But phrenology as such is more than many of us are prepared to accept. Notwithstanding the arguments of Dr. Hollander, there is not the least doubt that considerable advances in our knowledge of cerebral conditions may be traced to the work of

writers who have believed in "phrenology," and honour to whom honour is due ; but the author of "The Mental Functions of the Brain" fails to show any balance in his estimation of the scope of modern neurology. We do not deny that the book is interesting—quite the contrary—but the author must not feel disappointed if he fail to bring in converts to his theory of phrenology. Indeed, had he been less biassed and more judicial, less learned in the lore of the past, and more accurate in his knowledge of modern neurology, he could have made a valuable contribution to medical literature.

SURGICAL DISEASES OF THE KIDNEY AND
URETER, INCLUDING INJURIES,
MALFORMATIONS, AND DISPLACEMENTS.*

MR. HENRY MORRIS commences his book with an account of the normal anatomy of the kidney, and then proceeds to describe the various anatomical abnormalities, which may be met in connection with it. As regards the normal anatomy of the kidney, there is nothing new to be said ; but the author gives as clear and complete a description as might be expected from so experienced a writer on anatomy. The account of the various anatomical variations in position, size, shape, etc., of the kidneys, is by far the most complete that we remember to have read : and the author, by frequent reference to the specimens in the London museum, as well as to the literature of the subject, has done his work so well that this section of the book must, for a long time to come, be looked upon as containing the most valuable mass of information on the subject that can be gathered together.

Mr. Morris's conclusions on the subject of congenital absence of the kidney are so important from a clinical point of view, that they are worth quotation :—(1) The probability of a congenital absence of one kidney is exceedingly small.

* Surgical Diseases of the Kidney and Ureter, including Injuries, Malformations, and Displacements. By Henry Morris, M.B., F.R.C.S. In Two Volumes. Vol. I. London : Cassell & Co. 1901.

(2) There is a much larger risk of meeting with a fused renal mass. (3) The presence of a renal mass in any abnormal position should be sufficiently suggestive of there being but a single kidney, to prevent nephrectomy being done without first ascertaining whether there is a second kidney or not. Again, further on, Mr. Morris says, that a practical rule for surgeons to bear in mind is that if nephrectomy is contemplated on any person, who has any congenital malformation, and more especially if the malformation is of the genito-urinary system, very particular care should be taken to ascertain if there are two kidneys or only one. The importance of these statements can hardly be over-estimated.

We are surprised to meet with the following sentence in a book written by Mr. Morris, whose reputation as an anatomist stands so high :—

“The term mesentery does not imply anatomically a complete investment of the whole organ by the peritoneum, otherwise it could not be applied to the peritoneal covering of the cæcum or colon.”

We have always understood that it is an accepted fact that the cæcum is completely surrounded by peritoneum, and hence, has no mesentery.

The author's remarks on floating kidney are worthy of attention. He is an advocate of the operation of nephropexy, but holds that the presence of marked symptoms of hysteria is a contra-indication of operation. The mortality of this operation is given as slightly over 1 per cent., Mr. Morris himself having operated, in all, 57 times without a death. It would have been interesting, if we had been told in how many of these 57 cases the cure was permanent, and in how many the kidney again became moveable.

The subject of injuries of the kidney is most carefully dealt with ; but surely it is a mistake to quote, without any qualification, the statistics of Edler, giving the mortality in case of ruptured kidney, as 50 per cent. It is our impression that the death-rate is much lower than this. Operative treatment of

ruptured kidney is but seldom required, as in so many cases the patient makes an uneventful recovery, but it is interesting to see what operative treatment Mr. Morris advises. It is this:—(1) "In severe hæmorrhage, make an exploratory incision in the loin. If the kidney is ruptured, but the fragments are still attached to the hilum, stuff the interstices with gauze; (2) Suture with superficial stitches the two portions of a kidney, if they are attached to the pelvis and hilum; (3) If vessels are found bleeding outside the hilum, apply forceps and ligature; if within the pelvis stuff with gauze." If we have any criticism to offer on this line of treatment, it is this—that, if any operation is to be performed in a case of ruptured kidney, it should preferably be nephrectomy; for there are so many cases on record, in which stuffing with gauze or stitching the parts of the organ together has been followed by secondary hæmorrhage.

We notice that, in speaking of penetrating wounds of the kidney, the author advises that the wound should be dressed with "a piece of lint soaked in carbolised oil." We are sorry to see the use of so dirty a dressing recommended by a surgeon of Mr. Morris's standing. It is stated that there are only nineteen cases of aneurism of the renal artery on record, and yet the author says that the knowledge that such a condition is occasionally the result of injury ought to be an additional inducement to surgeons, if no contra-indication is present, to explore early every kidney, which is seriously damaged by an accident. We can only think that this statement is not intended to be taken literally.

The chapters on urinary fever are to be specially commended, both as regards the way in which the pathology of the condition is discussed and as regards the clinical description. The section on renal fistula is by far the most complete that we remember to have met with, and on the whole the same remark applies to the chapter on hydronephrosis. In speaking of nephrectomy for pyonephrosis, Mr. Morris gives the sound advice that, as practical experience proves the results of primary nephrectomy to be inferior to those of nephrotomy, the former operation

should be reserved for those cases, in which the secreting substance is totally destroyed, or in which drainage of the multilocular organ is imperfect. One of the best chapters in this volume is that on tumours of the kidney, and we may specially call attention to the excellence of the remarks on the differential diagnosis of renal tumours.

Taken as a whole, this first volume of Mr. Morris's book has impressed us most favourably, for the subject is dealt with in a thorough and exhaustive manner by a surgeon, who may be justly called one of the pioneers of Renal Surgery in this country.

A GUIDE TO THE MICROSCOPIC EXAMINATION OF THE EYE.*

EVERYONE who has had to investigate the anatomical and pathological structure of the eye will agree with Prof. Greeff "that the eye, in virtue of its peculiar form and composition, demands treatment differing in many respects from that sufficient for organs which are more consistent and uniform in structure, and the precise relations of whose parts it is less important to preserve." There are, moreover, certain processes which are adapted for the demonstration of the ocular structures solely. The scanty references to such processes in the ordinary textbooks of practical pathology made it almost impossible for any student to acquire an adequate knowledge of Eye Pathology unless he attended a special course of instruction on the subject—a matter in itself not easy to get in this country. In this respect this little manual supplies a distinct want, and all ophthalmologists and pathologists will be indebted to the author for its publication.

* A Guide to the Microscopic Examination of the Eye. By Prof. R. Greeff, Surgeon to the Ophthalmic Department, Royal Charité Hospital, Berlin. Translated from the second German edition. By Hugh Walker, M.A., M.B., C.M., Assistant Surgeon and Pathologist to the Ophthalmic Department of the Glasgow Royal Infirmary,

It contains an adequate and accurate description of all the ordinary, and most of the special, methods used for the demonstration of the anatomical structures of the eye and their pathological variations.

The principles on which the different processes of hardening, fixing, cutting, staining, and mounting are based, are shortly, though lucidly explained. Any student of medicine who has a good knowledge of ordinary anatomy and pathology, should have no difficulty in making a thorough and reliable examination of an eye, with the aid of this manual.

It cannot be expected that, in a book of this size, all the methods used in ophthalmic pathology should be described. Indeed the author makes particular mention of the fact, that the methods described are those which he has personally tested. It will be found, however, that all the older methods, as well as those of the most recent date, are included, provided they have been shown to possess some practical advantage in the demonstration of any anatomical or pathological structure in the eye. We think a little more stress might have been laid on the advantages of Formalin over Müller's and some of the older fixing solutions. One or two details in connection with the celloidin method might also have been treated more fully. No doubt the author has found the other methods equally efficient, and did not think it necessary to emphasise those methods which have gained a decided popularity in this country. However, each student will soon find which methods are most generally useful and efficient in his own hands. He will find in this handy volume a reliable guide to, and an accurate and lucid explanation of, all the methods he is ever likely to employ in the pathological examination of the eye.

The thanks of British ophthalmologists and pathologists are due to Mr. Hugh Walker for an accurate and readable translation of a work which should be found in every pathological laboratory.

INFANT FEEDING IN ITS RELATION TO HEALTH
AND DISEASE.*

A well-known appreciation is to the effect that there is "some fine, confused feeding" in a haggis. Similarly it might be said of Dr. Fischer's book that there is some fine confused reading in it. The author's avowed object has been "to give details pertaining to the feeding of infants and children requiring breast-feeding or hand-feeding," in a work which should "serve as a guide to both the active practitioner and also to the beginner in medicine." In pursuit of this object, he has left apparently no branch of the subject unconsidered; he has freely given his own conclusions (often very valuable); he has quoted from countless authorities, and has produced an absolutely unreadable book. This unfortunate result is due to the entire lack of any method or arrangement in the presentation of his material. Thus we begin with a chapter on "The Anatomy and Physiology of the Infantile Stomach," in the middle of which we are given information about the secretion of saliva, as well as the location of the sucking centre. We return to the functions of the gastric juice, and then pass to chapter ii. Here, before we are allowed to continue the study of "the influence of gastric juice on pathogenic germs," we have to attend to some remarks on "the action of the saliva on various bacteria." In chapter iii. is interposed information on "Stomach-capacity," with illustrations. In chapter iv., all the digestive "Ferments and their Actions" are considered except the gastric, to which, however, chapter v. bring us back with the unexpected opening, "another property of gastric juice." But the main part of this chapter is concerned with the intestines. Chapter vi. opens with the liver and bile, but suddenly reverts to "Ferments and Absorption." We cannot help thinking that chapter xxxiv., "Infant Stools," would have been more in place in this early part of the book than where it is, between xxxiii., "Modified Milk," and xxxv., "Nathan Straus Milk Laboratories and similar Charities," and

* *Infant Feeding in its Relation to Health and Disease.* By Louis Fischer, M.D. Philadelphia, Chicago: F. A. Davis Company, 1901.

that it is a mistake to separate "Constituents of Milk" from "Variations of Milk" and "Chemical Examination of Breast-Milk," by the insertion of a chapter on "Bacteria of the Intestine." It is not surprising with such looseness of arrangement to find that repetitions have not been avoided, and that paragraphs have been admitted whose value to the book at all may be doubted, as well as their position among the contents criticised. It would not be worth while to point out these defects, but that the book really contains most valuable material, and much information which is not otherwise very accessible. The remarks on water as an infant's beverage, on the value of raw cow's milk, on the evil results of the use of condensed milk, and on dieting in constipation may particularly be recommended to those who care to struggle with the difficulties the author has put in the way of his readers. The weakest part of the book is physiological, and here there are some questionable statements, as that gastric juice contains a ferment which splits up fats into glycerine and fatty acids (p. 19). But the book wants rewriting from beginning to end, and Dr. Fischer may reasonably be asked, when doing so, to arrange his material according to some plan, to set forth his quotations with more evident purpose, making it more clear also when he ceases to quote, and to rewrite in English. "Noon-time," "to leave the baby rest," "feeding it to the infant" may be passed as American eccentricities, but "the stomach is emptied much slower and less complete," "functionates," "to thoroughly mix the same before allowing" can be tolerated nowhere.

A TEXTBOOK OF EMBRYOLOGY.*

EMBRYOLOGY is one of the departments of Biology that has grown so much within the last few years that it has now an extensive literature of its own. When such an extensive amount of writing exists on a subject it follows for a certainty that the student requires some handy manual to guide him in his first efforts at

* A Textbook of Embryology. By John Clement Heisler, M.D.

acquiring a knowledge of that subject. Such a manual is that written by Dr. Heisler of Philadelphia. It is a book which we have perused with much pleasure and considerable profit. It is clear, concise, and like so many of Messrs. Saunders's publications extremely well illustrated. The book is a textbook full enough to be of real value, but not of that extensive character ill suited to the student who is not specialising in the more erudite departments of anatomy. We congratulate the writer on the method he has followed, that of making each chapter almost complete in itself so as to facilitate reference. We may particularly refer to the chapter (xiii) on the Development of the Genito-Urinary System as a model of clear scientific enunciation of a very complicated subject, but one of such importance to the Physician and the Surgeon that both are perforce-obliged to have some knowledge of it.

We can most confidently recommend Dr. Heisler's book to the student of biology or medicine for his careful study, if his aim be to acquire a sound and practical acquaintance with the subject of Embryology.

ANATOMICAL ATLAS OF OBSTETRICS
WITH SPECIAL
REFERENCE TO DIAGNOSIS AND TREATMENT.*
ATLAS AND EPITOME OF LABOUR AND
OPERATIVE OBSTETRICS.†

THESE two volumes of a handy little series of Atlases are complementary to each other. The first Atlas deals with obstetrics especially from the clinical and pathological point of view, while the second approaches the subject more from the

* Anatomical Atlas of Obstetrics with special reference to Diagnosis and Treatment. By Dr. Oskar Schaeffer. Authorised Translation from the second revised German edition. Edited by J. Clifton Edgar, A.M., M.D. London and Philadelphia: W. B. Saunders and Company. 1901.

† Atlas and Epitome of Labour and Operative Obstetrics. By Dr. Oscar Schaeffer. Authorised Translation from the fifth revised German edition. Edited by J. Clifton Edgar, A.M., M.B. London and Philadelphia: W. B. Saunders and Company. 1901.

mechanical and surgical stand-point. Since the works are published primarily as Atlases, they will of course in the first place be judged according to the success or otherwise of the illustrations they contain. As regards the diagrams, which are present in profusion in both volumes, it may be said that they succeed very well in conveying ideas of the conditions and processes they are intended to represent. Many of the coloured prints give excellent and very real renderings of various pathological conditions. At the end of the smaller volume, that on Labour and Operative Obstetrics, 122 diagrams with short but sufficient explanations to each, make up about half the bulk of the book, and deal very fully with the presentations, the mechanism of labour, and with the different operative obstetric methods. This series of diagrams forms a very useful and complete pictorial aid to the proper understanding of the various conditions dealt with.

In addition to the illustrations, a succinct epitome of most of the subjects usually treated in manuals of obstetrics forms an important part of the bulk of each volume. The letterpress thus forms a short résumé of the present state of knowledge and practice obtaining in Germany, which differs however in some respects from British theory and practice. For this reason the Atlases are likely in this country to be of greater service to those who are already qualified, than to students preparing for examination. The concise style of the text does not always lend itself to clearness of expression, so that here and there one comes across a sentence which is difficult to understand. On the whole, however, the work of translation has been well done, and the book is likely to be a useful remembrancer to those who have already obtained a sound working knowledge of midwifery, and who are thus enabled to accept in a critical spirit the teaching here given. That the Atlases in the country in which they originated have supplied a want is evidenced by the fact that the smaller of the two is already in its fifth edition.

The publishers have done their work well ; the type is clear, the paper good, the binding strong, and the illustrations are well reproduced.

A TEXTBOOK OF THE DISEASES OF WOMEN.*

THIS voluminous treatise is prefaced by an account of the development of the female genitals followed by a description of their anatomy, the two being so exhaustively worked out that they occupy no less than 115 pages. This is succeeded by 120 pages dealing with examination and treatment in general, and then at length the special diseases are described.

It is easy to see, therefore, that this volume may be invaluable as a work of reference, but is rather too bulky to be recommended to the student as a desirable book to read for examination purposes. The various positions used in gynæcological examination and the special instruments are freely illustrated, and a chapter is devoted to electrical treatment which the author considers of great value. There is an interesting chapter also on hermaphroditism and hypospadias and epispadias in the female, and masturbation is discussed and clitoridectomy advised in certain cases.

For complete rupture of the perinæum, the author has found Tait's operation superior to all others.

The technique of the major operations is described with great care and completeness, and the many operations known by the names of those surgeons who introduced them find places in almost bewildering profusion.

The whole work is lavishly illustrated, and the printing and index are good. On the whole this volume may be recommended as a very complete treatise on the subject and should prove invaluable to the practitioner for the purpose of reference. Its popularity may be judged by the fact that the last edition was exhausted in two years.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

WE have received specimens from Messrs. Burroughs & Wellcome of a Tabloid containing $\frac{1}{100}$ grain of sulphate of atropine

* A Textbook of the Diseases of Women. By Henry J. Garrigues, A.M., M.D. Third edition. Philadelphia: W. B. Saunders and Co.

for use in dilating the pupils. The Tabloid is intended to replace the drop bottle in medical practice, and has obvious advantages. The same firm also send us Soloids containing $\frac{1}{4}$ grain of nitro-propiol. One of these Soloids, boiled with 10 minims of sugar-containing urine and 3 drachms of water, gives to the mixture a deep blue colour. The test is one which has recently been advocated as superior to that in general use, and though we are not satisfied that this superiority has been established, it is worthy of trial.

We have also to acknowledge the receipt of a leather letter case, card case and season-ticket case from Messrs. Letts & Co., who have connected with the sale of these articles a scheme for insurance against small-pox.

New Books, etc., Received.

From W. B. Saunders and Company—

Nothnagel's Encyclopedia of Practical Medicine. Variola, Vaccination, Varicella, Cholera, Erysipelas. Whooping-Cough. Hay Fever. By H. IMMERMAN, TH. VON JURGENSEN, C. LIEBERMEISTER, H. LENHARTZ, G. STICKER. Edited, with additions, by JOHN W. MOORE, M.D., F.R.C.P. Authorised Translation from the German, under the Editorial Supervision of ALFRED STENGEL, M.D.

The Four Epochs of Woman's Life. By ANNA M. GALBRAITH, M.D., with an Introductory Note by JOHN H. MUSSEY, M.D.

From Macmillan and Co. Limited—

Some Thoughts on the Principles of Local Treatment in Diseases of the Upper Air Passages. By SIR FELIX SEMON, M.D., F.R.C.P.

We have also to acknowledge the following—

Anisometropia, and other Papers by Dr. ALEXANDER DUANE.

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THE
BIRMINGHAM MEDICAL REVIEW.
APRIL, 1902.

ORIGINAL COMMUNICATIONS.

CLINICAL LECTURE ON UMBILICAL HERNIA.*

BY GILBERT BARLING, M.B., B.S., F.R.C.S.,
SURGEON TO THE BIRMINGHAM GENERAL HOSPITAL.

Gentlemen,

We have recently had three cases of umbilical hernia admitted under my care, and as they afford some useful lessons and contrasts, I propose to take them for the subject of my lecture to-day.

Case 1.—Mrs. B., a stout woman, æt. 55, the mother of fifteen children, was admitted on December 16th, 1901, complaining of an umbilical hernia which had existed twenty-five years, but which had become acutely strangulated some thirty hours before admission. At that time the hernia, which had hitherto been partly reducible, became intensely painful, with a feeling of nausea, which was soon followed by vomiting, and this continued till the time of operation; the bowels acted a little while before strangulation set in. On admission, the patient was complaining of intense pain in the hernia which was about the size of an ordinary orange, was extremely tense, and was blistered on its surface; but the explanation of the blebs was found in the applications that had been made to relieve the

* Delivered at the General Hospital, January 23rd, 1902.

pain. Reduction of the hernia without operation was quite out of the question.

Operation.—Under ether, an incision was made in the middle line just above the hernia, and when the abdomen was opened a finger was passed in and found a small orifice with an extremely tight grasp of the hernial contents. Very carefully the sac was laid open from above, and was found to contain a loop of about four inches of small intestine of a deep purple black colour, but with its peritoneal surface glistening, and with some adherent omentum between the surface of the bowel and the sac. After enlarging the very tense constriction, the intestine was released and then drawn out of the wound, when it was found that at the upper point of strangulation of the intestine there was a greyish white line across the bowel, which was here quite dead and ready to give way. An immediate resection was therefore made and about six inches of gut were removed, so that perfectly healthy tissues were left for subsequent union. In the process of the resection two points are worth emphasising; first, that by the aid of an aneurism needle all the mesenteric vessels were secured before being divided, so that practically no blood was lost and a very brief time was occupied in securing the vessels; the other point is that the intestine was divided at a slightly obtuse angle to the line of the supplying blood vessels, so that the portion of the intestine opposite the mesentery and farthest from it was well supplied with blood—this is essential for good repair. Union of the divided ends was made with a one inch Murphy button, the intestine was replaced, the adherent omentum, the sac, and the overlying loose skin were removed, and as good a radical cure as could be effected was made. It was not possible to secure good muscular tissue on each side to approximate as the recti were thinned and atrophied, so buried mattress sutures of silkworm gut were employed to bring together a broad flange of aponeurotic tissues, and finally the skin was sutured.

The whole operation occupied nearly an hour, but was well borne, and recovery was absolutely uneventful.

You see this patient to-day with a good strong firm scar supported by an abdominal belt, for without this further yielding is likely to occur. The points to be emphasised in this case are that the hernia was a small one, that the constriction was extremely severe, and that the gangrene was produced at the point of constriction in less than thirty-six hours. The gangrene in strangulated hernia may occur either at the point of constriction, or about the middle of the strangulated loop, and cases like this should impress upon us the necessity of always examining the point of constriction before allowing the intestine to return in the abdomen.

Case 2.—By a curious coincidence, lying in the next bed to case 1 was a stout woman, *æt.* 52, the mother of eleven children, who had been under my care seven years previously for a small umbilical hernia, in which strangulation had existed four days and was due to a dense band in the sac. As in case 1, there was constriction gangrene of the intestine which was treated by resection and immediate union in the manner above described, with a very good recovery. I did not then attempt a radical cure of the hernia as in case 1; probably I looked upon intestinal resection then as a more hazardous proceeding than I do now.

Since this operation I have from time to time seen the patient, always with an increasing hernia most difficult to relieve by any kind of support. Latterly, the surface of the hernia had become ulcerated, and in several places omentum had protruded. The patient was therefore admitted for a radical cure, which was performed on the lines described in case 1, though the operation was a more formidable one, as at least a couple of pounds of omentum had to be removed. A good firm scar is the result, and with care in wearing a well fitting abdominal belt the patient gets about in comfort, which she could not do before, and in safety also. This case is quoted to show the advisability, when it is by any means possible, of doing a radical cure after the relief of strangulation in umbilical hernia.

Case 3.—A stout woman, *æt.* 58, the mother of fourteen children, was admitted on January 13th, 1902, with a very large

umbilical hernia. This was of long standing and was steadily increasing in size, but did not give rise to acute symptoms until January 12th, when, during a fit of severe coughing, due to bronchitis from which she had suffered since January 8th, the hernia became very large and painful, and vomiting set in. On admission, the patient was in a good deal of distress from pain and frequent vomiting, whilst the hernia, as large as one's head, was extremely tense and the skin over it quite livid in places owing to the pressure from within. From the extreme tension there was not the faintest hope of reduction by taxis, and operation was therefore proceeded with at once. The abdomen was opened in the middle line above the hernia, and then very cautiously the sac was opened in its whole extent. It contained large and small intestine and omentum moderately congested and very little damaged at the points of constriction, in marked contrast to the conditions found in case 1, though strangulation had existed about the same length of time in the two cases. The adherent intestine was liberated and returned, the sac with a large quantity of adherent omentum and most of the overlying skin was removed, and as the muscular tissue of the recti muscles was too feeble and too widely separated to be approximated, I utilised the aponeurotic tissues and buried mattress sutures of silkworm gut to repair the weakness in the abdominal wall.

The patient is making an easy recovery, but to prevent a return of her hernia a well fitting abdominal belt must be worn.

You will observe that all these women were well on in the middle period of life, all were very fat and had borne numerous children, in fact they were typical subjects for umbilical hernia. Such patients suffer great inconvenience from their ruptures partly from their tendency to grow fat, partly from carelessness in feeding and in neglecting to wear an efficient support. They also of course incur not only inconvenience but also actual danger to life from strangulation.

What can we do to relieve them? In the first instance we can give them advice as to the avoidance of fat-producing foods,

and though most of it will fall on deaf ears some good effect will be produced, and the doctor's conscience at all events will be clear. We must also tell them to avoid notoriously indigestible foods, and over-eating even of those that are reasonably wholesome. Want of care in such matters often leads to incarceration in large umbilical herniæ, owing to the distension of the herniated intestine by flatus and by undigested and fermenting food. The attraction of pork and young potatoes or similar unsuitable food seems, despite medical warnings, to be too great for some of these patients, and they pay the price in an attack of incarceration which may eventually pass on to one of strangulation.

In the matter of supporting the hernia much may be done by an intelligent instrument maker ; no regular pattern of support will suit all cases. Some herniæ are large, others small ; some are reducible, others irreducible ; in some patients the support rides up and must be kept in place by perineal bands, in others it slips down and needs shoulder straps and sometimes needs anchoring in both directions.

Despite all care, many of these herniæ become excoriated, requiring the patients to lie in bed to secure healing, and this is liable to recur. In a certain number of cases then, from the discomfort and inconvenience the hernia produces, the surgeon will be asked for, or will himself suggest, some operative measures for relief ; in fact the question of radical cure comes to the fore.

Radical cure for some forms of hernia is what its name expresses ; but in others it is not, for unless a support is worn after operation the hernia recurs. This is generally the case in umbilical hernia in which the conditions are unfavourable to a radical cure, the unfavourable conditions being the steadily increasing fatness of the patient, often the persistence of a cough from chronic bronchitis, and the difficulty generally in obtaining good material to close the defect in the abdominal wall, owing to the stretched and atrophied state of the recti muscles. Under the pressure of necessity as described above we must, however, do, not what we would but what we can, and for the details I refer you to the operation described in case 1.

This operation should be done in patients who are unable to find a comfortable and efficient support for their herniæ, or in those, as in case 2, where there is excoriation or even perhaps prolapse of omentum through the skin. Again, the same procedure should be followed when operating for strangulation, always assuming that the patient is a fit subject for the operation and able to bear it without adding considerably to the risk to life, and this remark applies equally to the operation in patients without strangulation.

To refer again for a minute to the cases of strangulation just described, you will find that they are fairly typical of the two classes of strangulated umbilical hernia you will meet with.

Case 1 is the type of the small hernia in which, as a rule, strangulation is very tight and severe, and early operation is urgently called for as gangrene may speedily result. I had, not very long ago, a tragic case of this kind in a man with a hernia not larger than a big horse chestnut. Strangulation had existed four days, and the man was dying with gangrene of a short loop of small intestine.

Case 3 is a type of the large hernia with a big ring, and in these strangulation is not so severe, and the urgency for immediate operation may not be so great. I always hesitate to suggest that any case suspected to be a strangulated hernia is not urgent for operation, and I do so here in a very guarded way. Everyone, however, who has seen a good number of large umbilical herniæ with acute symptoms, will recognise that it is at times most difficult to be sure whether the condition is one of *strangulation*, or merely of *incarceration*. Let me briefly relate an illustrative case. I was asked to see in the country a lady, æt. 75, the subject of a very large umbilical hernia. The history of the illness for which I saw her was as follows: she was in her usual health, the hernia partly reducible, on December 25th, and her bowels acted that morning. Later in the day, after a rather unwise meal, she suffered severe pain in the rupture, vomited several times bile-stained mucus, and was unable to pass any flatus. On December 26th some opium was

administered and she vomited scarcely at all, but the bowels did not act, nor was any flatus passed, and the hernia remained large and painful. I saw the patient on the evening of the 27th, and found her vomiting occasionally a brownish coloured fluid of disagreeable odour. The hernia was not tender, but was quite irreducible and varying very considerably at times in its tension, evidently from peristalsis in the intestine. The bowels were still absolutely obstructed; the pulse was 86.

The question I had to consider was whether the hernia was incarcerated or strangulated, and if the latter, what was to be done; for bearing upon this I should mention that the patient was much opposed to operation, she was very stout, and the subject of aortic valve mischief. As there was no train available for me to return that night, and as from the varying tension in the hernia I thought incarceration the likelier of the alternatives, I felt justified in not pressing any operative measures, but decided to leave any question of operation until the morning. From the time I saw the patient in the evening until 8 o'clock the next morning nothing at all was given by the mouth, and three large enemata with turpentine were administered during the same time. When I saw the patient on the morning of the 28th, her pulse had fallen to 76, flatus had been passed freely, vomiting had ceased, the hernia was nearly free from discomfort and was not tense to any degree. It appeared to me certain therefore that the condition was one of incarceration, and I felt justified in returning home with the feeling that the patient was on the way to recovery, which was borne out by the subsequent history.

In a case such as this, with no very urgent symptoms, with a pulse only moderately quickened, and with a facial expression not indicative of much distress, it is justifiable to wait some hours to see what starvation and enemata will do. If at the end of from six to twelve hours relief has not been obtained, there should be no further delay, as strangulation may be taken to exist. Above all things, if incarceration is suspected, do not give purgatives, they are not nearly as likely to succeed as the

milder measures described above, and if they do not succeed they greatly aggravate the patient's distress, and do actual harm.

I have notes of an old woman who has several times been an inmate of the hospital. She is hugely stout, suffers from chronic bronchitis and emphysema, and has a large umbilical hernia. On five occasions she has been under my care with symptoms suggestive of strangulation, pain and tension in the hernia, vomiting and complete obstruction. On the first occasion, I operated and found moderate strangulation of large and small intestine, and much adherent omentum, but a radical cure was out of the question, the patient's lungs and heart being so much embarrassed. On the second and third occasions, I hoped that the condition was one of incarceration from undigested food, and had the satisfaction of seeing the symptoms yield to starvation and enemata. On the fourth occasion, I thought I had to deal with the same condition, but the treatment formerly successful, failed, and at the end of twelve hours I again had to operate, with success it is true, but without being able to do a radical cure owing to the state of the chest. On the fifth occasion, although there was frequent vomiting, and absolute obstruction for twenty-four hours, the tension in the hernia seemed so moderate, that it seemed not unlikely the symptoms could be relieved by starvation and enemata, and this proved to be true. The case is an interesting one as showing it is not easy to differentiate between incarceration and strangulation, and it shows also very well the misery and anxiety such a hernia brings. If only the patient's general condition had admitted of such an attempt at radical cure as I have described earlier, she would have been saved much distress and danger, and her condition is a strong argument for radical cure whenever possible in cases of strangulated umbilical hernia.

THE CLINICAL SIGNIFICANCE OF LEUCOCYTOSIS.

BY JOHN T. HEWETSON, M.D. (EDIN.), F.R.C.S. (ENG.).

(Continued from page 173.)

34.—F. B., æt. 39, male. Perigastric abscess, following a perforated gastric ulcer; symptoms of perforation occurred about a month ago.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 13th	100·5	100	24	15280
Operation revealed an abscess containing about two ounces of foetid pus, well shut off by adhesions, situated between the stomach and the anterior abdominal wall. Anæsthetic—Ether.				
14th	98·6	85	24	14400
15th	99	84	22	12000
16th	98	88	20	15760
17th	98·4	90	20	14960
18th	99	112	24	13360
19th	100	106	24	18080
21st	99·8	100	24	12480
23rd	100·6	90	22	15280
28th	97·4	76	22	7280
31st	98·6	76	22	12160
June 5th	98·6	80	20	10240

The wound was dressed daily, and it discharged freely until May 23rd. On June 1st it was practically healed.

The after-treatment of this case is sufficiently instructive to merit a few remarks. The abscess did not drain well, due partly to its position and partly to the irregularity of its interior. This imperfect drainage explains not only the continued leucocytic increase, but also the fluctuating character of the leucocyte curve. The last blood examination, made a few days after the wound had healed, is scarcely satisfactory, and it is of interest because a few months after his discharge from hospital he was

re-admitted with all the aggravated symptoms of his primary condition. Such a terminal leucocytic reaction corroborates the suggestion that, even in the early days of June, there must have been a slumbering pyogenic focus beneath the placid scar, probably in the base of the gastric ulcer, which later on broke out into more vigorous action.

35.—M. B., æt. 28, female. This patient passed through an attack of catarrhal appendicitis several weeks ago. The temperature, however, never settled to the normal, but continued to rise to 101° or 102° every evening, falling to normal in the morning. She complained of no pain or discomfort whatever, and a careful physical examination failed to elicit any obvious cause for the fluctuating heat value, fairly rapid emaciation, and weakness of the patient.

Bacteriological cultivations from the blood were quite sterile.

	Temp.	Pulse	Resp.	Leucocytes per c.m.
July 13th, 1900	101	104	36	38720
16th	102·4	104	28	28560

July 19th Suddenly coughed up half a pint of pus from the lungs.

20th	101	116	28	21680
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Sent to the Jaffray Hospital. Died August 4th. Autopsy revealed a large left-sided sub-phrenic abscess, perforating the diaphragm and bursting into the left lung. A few adhesions were visible in the region of the appendix, which otherwise was normal. As no mention is made of the stomach in the *post-mortem* report, it is one's duty to assume that this organ was normal, and that the sub-phrenic abscess was not the result of a subacute gastric perforation. The moral of such a tragic condition surely is, no matter what the origin of the abscess, that given an acute abdominal illness like appendicitis or gastric perforation, regular leucocyte estimations would be of value in revealing the onset of obscure suppurative sequelæ. It is probable, had such estimations been made in this case during

and after her attack of appendicitis, that suppuration would have been discovered early and efficiently dealt with. The leucocytosis in this case was very pronounced; it suggested to my mind three conditions—unresolved pneumonia, obscure suppuration, and some form of blood infection. There was no history whatever of pneumonia, and the blood which I examined on two occasions was quite sterile, so that I was led to the opinion that the patient was suffering from some deeply seated abscess producing no local symptoms whatever. The sudden emission of pus from the lung confirmed that opinion, and threw considerable light upon its locality. The general opinion was that the patient suffered from pulmonary tuberculosis; a few râles, with indefinite bronchial breathing at the right base, appeared to support that view, but such a high leucocytosis could not be explained in this way.

36.—S. S., æt. 43, female. This patient came into hospital with a large left lumbar abscess, secondary to kidney mischief. The abscess, which was regarded by the surgeon as a tuberculous one, was opened on July 13th. The kidney was not explored. It continued to drain freely for a week or ten days; at the time of my first leucocyte count, the discharge from the sinus was very small in quantity, but the patient had commenced to complain of severe abdominal pain, accompanied by marked tenderness over the left kidney. The case was regarded as one of tubercle of the kidney with extension to the peritoneum and lungs.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 30th, 1900	100·6	144	28	39680
31st	100	—	—	40080
Aug. 1st	99·4	—	—	37920
4th	98·6	—	—	57440
8th	98·6	—	—	32480

Differential count :—

	Per cent.
Polynuclear finely granular oxyphiles	91

	Per cent.
Small lymphocytes - - - -	6
Large lymphocytes - - - -	2'6
Polynuclear coarsely granular oxyphiles -	'2
Mast cells - - - -	'2

Patient died about the middle of August.

Autopsy revealed a large ragged stone filling up the pelvis of the left kidney; small abscesses in the kidney substance; small collections of pus were found amongst the matted coils of the small intestine some of which had ulcerated into the lumen of the gut. The peritoneal infection was due to a large perforation in the pelvis of the kidney through which a fragment of the calculus projected. There was no pulmonary tuberculosis.

Had a leucocyte count been made in this case before the lumbar abscess was opened, it would probably have led the surgeon to regard the case as non-tubercular, and with that idea in mind he would have explored the kidney for stone, which would have been found without the slightest difficulty. A pure tuberculosis gives no leucocytic increase; tubercle plus sepsis gives a definite increase; so in deciding whether a pyonephrosis is a tubercular or a calculous condition this fact must always be borne in mind. In this particular case a leucocyte chart would probably have been of great value.

37.—F. B., æt. 13, male. Ulcer on the right foot two weeks ago; tender enlarged inguinal glands; tender lump in the right iliac fossa. The surgeon in charge does not think that suppuration had been established.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug. 18th, 1900	101'8	—	—	19840
19th	100'4	—	—	19360

Differential count:—

	Per cent.
Polynuclear finely granular oxyphiles	83
Small lymphocytes - - - -	13'2
Large lymphocytes - - - -	2'2
Polynuclear coarsely granular oxyphiles	1'6
Aug. 21st	101'8 — — 28480

Operation performed ; incision made into right iliac fossa ; no pus was found. Anæsthetic—Ether.

	Temp.	Pulse.	Resp.	Leucocytes, per c.m.
Aug. 22nd	102	112	36	28240
23rd	101	92	30	29680
24th	While the house-surgeon was dressing the case on this day, a large abscess containing several ounces of pus was burst open as a result of firm palpation in the region of the wound.			
25th	98·6	80	28	16240
26th	98·6	60	20	13440
28th	98·6	—	—	14960
31st	98·6	—	—	11840
Sept. 4th	98·6	—	—	9360

The wound discharged freely from August 24th, and was healed on September 2nd. The patient left hospital on September 11th. It is practically certain that the incision made on August 24th missed the existing abscess. Ether was the anæsthetic, and unless increasing suppuration had existed the leucocyte numeral would not have been maintained at such a high value for two days. After the pus was accidentally evacuated, the leucocytes, temperature, and pulse rapidly fell to normal.

From this limited number of abdominal suppurations, it is possible to realise that very much the same leucocytic reaction is to be found as in suppurative appendicitis, which advances and retrogresses according to the special phase of the pyogenic process. So that, given a definite leucocytosis in an acute inflammatory condition of the abdomen, it is necessary to bear in mind that it gives no clue to the origin of the inflammatory process. It might be, for example, appendix, fallopian tube, ovary, kidney, gall bladder, stomach ; then again, internal and external strangulated hernia, acute intestinal obstruction, produce a definite leucocytosis. Advanced malignant disease of the intestine frequently gives rise to a well marked increase of leucocytes in the blood. Many conditions, however, which are frequently mistaken for suppurative appendicitis or other inflammatory

conditions, never of themselves produce any leucocytic increase, such, for example, as enteric fever, intestinal colic, biliary and renal colic unattended by inflammatory phenomena, floating kidney, impacted fæces, the various abdominal neuralgias, and tuberculous peritonitis or adenitis.

OTHER LOCALISED ABSCESES.

38.—J. L., æt. 28, male. Acute abscess of neck, following a sore throat; no sore throat at present.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 26th	104	—	—	21200
Opened same evening, pus evacuated. Anæsthetic—A.C.E. mixture.				
27th	101	—	—	16800
28th	99	—	—	13840
29th	99	—	—	9360
July 2nd	98.6	—	—	10080
Small abscess appeared on forearm; being fomented.				
11th	98.6	—	—	12640
Opened same evening.				
13th	98.6	—	—	6880
Discharged well.				

39.—M. B., æt. 15, female. Abscess of neck, one week's duration, due to a carious tooth.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Aug 8th	100	—	—	21520
9th. Abscess opened; tooth extracted. Anæsthetic—A.C.E. mixture and ether.				
11th	99.2	—	—	13360
13th	98.4	—	—	11200
15th	98	—	—	13680
18th	99	—	—	8720
22nd	98.4	—	—	6800
Discharged well.				

40.—F. C., æt. 37, male. Suppurative parotitis.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 8th	99'4	—	—	14320
Hot fomentations applied.				
12th	99'4	—	—	11200
Incision made; about one drachm of pus escaped.				
17th	N.	—	—	8400
Recovery.				

41.—J. G., æt. 56, female. Small abscess of breast, following cracked nipple.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 10th	100	—	—	14000
Operation; incision; 3ss to 3j of pus evacuated. Anæsthetic—Gas, ether, and chloroform.				
Sept. 11th	99'6	—	—	16560
12th	N.	—	—	13120
17th	98	—	—	9680

42.—E. P., æt. 20, female. Swollen tender breast; probable abscess.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 24th	N.	—	—	12640
Operation; no actual abscess cavity found, but acute general inflammation of breast.				
26th	N.	—	—	9840
28th	N.	—	—	6240
Recovery.				

These five cases are of interest in showing that abscesses in other parts of the body besides the peritoneum produce a definite leucocytosis. The blood count was of no value in the diagnosis, since in the above-mentioned conditions suppuration was easily determined by physical examination alone.

SUPPURATIVE PLEURISY OR EMPYEMA.

43.—A. H., æt. 12, male.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
June 29th, 1900	98	120	26	14080
July 2nd	98	—	—	21200
3rd Operation; freely opened and drained. Anæsthetic—Chloroform.				
4th	100	—	—	25120
6th	98.8	—	—	12480
10th	97.8	—	—	12160
16th	98	—	—	13360

Still discharging.

This patient left hospital still discharging, and it is obvious that his leucocyte count had not fallen to the normal.

44.—E. P., æt. 21, male.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 12th, 1900	103	136	48	15280
Operation same evening; a large amount of pus was evacuated. Anæsthetic—Ethyl chloride locally.				

13th	102	120	52	9360
14th	99	—	—	16640
16th	99.6	—	—	11360
19th	99.4	—	—	17120
26th	100.6	—	—	17280
Aug. 3rd	100	—	—	17920

Still discharging freely.

The rapid fall of the leucocyte curve following evacuation under local anæsthesia is somewhat interesting. The patient left hospital still discharging, but was re-admitted in a few weeks with aggravated symptoms of the same disease.

45.—W. P., æt. 5., male.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 6th	98.2	96	24	21840

Operation same evening, large amount of pus being evacuated.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 7th	99·2	100	28	12960
20th	103	150	40	29040
27th	98·2	116	40	17250
Aug. 7th	98·4	104	34	20400

Left for the Jaffray Hospital, still discharging.

46.—S. H., æt. 2, female. Had pneumonia about ten days ago; the temperature has not settled, and the question of some complication arose.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
July 11th	—	—	—	12680

Exploratory puncture made; pus was found. Small empyema opened the same evening.

28th	—	—	—	14680
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Still discharging. Sent to the Jaffray Hospital. Died early in August. Autopsy revealed a small empyema and abscess of lung.

47.—M. P., æt. 45, female. Admitted to hospital in practically a moribund condition. It was probably a post-pneumonic empyema.

Aug. 28th Thirty-five ounces of pus drawn off by aspirator.

	Temp.	Pulse.	Resp.	Leucocytes. per c.m.
29th	100·4	158	56	50000

Pleural cavity freely opened and drained on the evening of this day.

30th	100·2	160	64	26640
31st	101	150	56	33120
Sept. 1st	100·6	148	56	34800
2nd	100	144	56	34000
3rd	100·6	128	48	16800
4th	100·6	140	58	19360
6th	100 2	156	48	32160

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 8th	100'4	148	56	13440
11th	100'4	132	44	12480
17th	100	130	32	6240
27th	101'2	76	40	11840
Oct. 9th	98'6	108	36	10240

There is still a little discharge, though the patient is up and walking about.

This case was admitted to hospital apparently *in extremis*. The leucocyte count, though taken after thirty-five ounces of pus had been withdrawn, was very high. Her recovery was slow and gradual, and the leucocytosis, though somewhat fluctuating in amount steadily decreased until the last few weeks, when it remained at a slightly plus value, due no doubt to the still existing discharge.

48.—A. C., æt. 32, female. Admitted with the physical signs of fluid in the right pleural cavity.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 23rd	—	—	—	15280

By exploring syringe, turbid serum was withdrawn, which contained pus cells and gave a pure growth of streptococcus pyogenes.

Oct. 26th	—	—	—	29680
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Differential count :—

	Per cent.
Polynuclear finely granular oxyphiles	96.4
Small lymphocytes	2
Large lymphocytes	1.6

Oct. 27th	—	—	—	30360
Nov. 1st	—	—	—	26160

4th The pleural cavity was freely opened upon this day and drained.

7th	—	—	—	13120
13th	—	—	—	12800

The wound is still discharging freely. On October 23rd, the pleural effusion consisted of turbid serum, whereas on November 4th, when evacuated, it was composed of thin yellow pus.

49.—R. F., æt. 20, female. Empyema following pneumonia.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
May 25th	101	130	70	42800
28th	100	100	60	34160

Operation same evening; forty-two ounces of pus were evacuated from pleural cavity.

May 31st	99·4	125	50	10520
June 2nd	99·4	112	44	11680
6th	98·6	108	36	12480
11th	98·6	100	34	11680
18th	98	100	32	11520

Sent to the Jaffray Hospital; still discharging slightly.

There was a very pronounced leucocytosis in this case, which all but disappeared after the evacuation of the pus.

50.—P.G., æt. 3, male. The child was convalescing from an attack of broncho-pneumonia; the temperature was normal, yet the child looked very pale, and did not progress as satisfactorily as it ought to have done. The physician, who proposed to discharge the patient on August 31st, asked me to examine its leucocytes.

	Temp.	Pulse.	Resp.	Leucocytes. per c.m.
Aug. 31st	98·4	108	27	15600

A careful examination of the chest revealed a dull area at the base of one lung. On exploring, pus was found, and in the evening was evacuated freely.

Sept. 3rd	98	104	44	14080
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No more blood examinations were made.

SEROUS PLEURISY.

51.—W. K., æt. 38, male. Pleurisy with effusion.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 14th	100·8	108	32	5280
15th	101	108	32	10240
22nd	100·8	84	24	8080
24th	100	92	24	6080

Recovery.

52.—H. E., æt. 13, male. Pleurisy with effusion. Clear fluid withdrawn.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Sept. 14th	103	120	36	6800
15th	103	120	36	5600

Recovery.

53.—A. N., æt. 11, female. Pleurisy with effusion. Clear fluid withdrawn.

	Temp.	Pulse.	Resp.	Leucocytes, per c.m.
Oct. 24th	—	—	—	4960

54.—H. F., æt. 48, male. Pleurisy with effusion. Large quantity of clear fluid withdrawn.

	Temp.	Pulse.	Resp.	Leucocytes per c.m.
Oct. 6th	99·6	96	20	5440

CONCLUSIONS.

Suppurative pleurisy produces a very definite leucocytosis of the polynuclear finely granular variety.

On evacuation the leucocytosis does not disappear with the same rapidity as we have noticed after the drainage of other abscess formations. In none of my eight cases did the white corpuscles reach their normal standard after the pleural cavity was freely opened. This is due largely to the great difficulty

experienced in effectively draining such a peculiar collection of pus. There is practically always a certain amount of undrained matter, and this continues until the whole pleural space is obliterated.

Then in many of those post-pneumonic empyemas there is associated with it a retarded resolution, which is of itself sufficient to maintain a high leucocyte numeral. Lastly, it is probable that suppurative inflammations, involving or adjacent to the lung, tend to produce a higher general leucocytosis than similar inflammations elsewhere, which is in keeping with the extensive local leucocytic emigration of this highly vascular organ.

Gross accumulations of pus after evacuation of purulent pleurisy would, in all probability, be detected by regular blood examinations. After the crisis of pneumonia, the leucocytes usually fall to their normal standard in the course of a day or two. Should this not occur, it suggests the possibility of such complications as empyema, lung abscess, gangrene, or retarded resolution. A careful examination of the chest will satisfy the physician whether this suspicion is correct or not, and the matter will be placed beyond a doubt by the judicious use of an exploring syringe.

In none of my four cases of serous pleurisy, which are inserted for the sake of comparison, did I obtain any increase of the white blood corpuscles. This forms a very striking contrast to that of serous peritonitis. It also suggests the possibility that a blood examination would be of value in differentiating serous from purulent pleurisy.

In reviewing this limited number of leucocyte records bearing upon the subject of suppuration, there are several general impressions left upon one's mind. Pent-up suppuration of the usual pyogenic character is almost constantly associated with a leucocytosis. Not only is there a great increase of the white blood corpuscles at the seat of the inflammation which act as the first line of defence, but also there is a pronounced increase of the circulating leucocytes which act as the reserve force, upon

which further demand may be made. The local leucocytosis or first line of defence cannot easily be determined, but the general leucocytosis or reserve force can be accurately measured without the least difficulty. And we find that this general leucocytic increase follows so closely the precise progress of the local suppuration, that its regular estimation furnishes an important clinical guide in the study of this common surgical malady. It would be foolish to advocate leucocyte estimation in all cases of suppuration, such is entirely unnecessary. Yet in many deep suppurations, especially those associated with abdominal organs, the labour entailed by regular blood examinations would be amply repaid. In obscure conditions, the leucocyte record might suggest a clue to its complete elucidation, it might settle the diagnoses, and it would frequently obviate that fatal error of labelling obscure cases associated with elevated temperature as "tubercular."

More than one of the above-mentioned cases with vague and obscure symptoms were regarded as tuberculous and beyond the pale of surgical resource. An important diagnosis is sometimes suggested to the clinician by a very insignificant physical condition. The clinician who despises detailed and exhaustive physical examination, who trusts largely to that admirable faculty, "clinical instinct," must frequently find himself very far afield in diagnosis. I would unhesitatingly advise a more frequent use of the Thoma Zeiss hæmocytometer in surgical practice, and I have sufficient confidence in the consistency of leucocytic reaction to say that it has few rivals in the faithfulness with which it reflects the progress of local suppuration.

REPORTS OF CASES.

A CASE OF PRIMARY PNEUMOCOCCUS MENINGITIS SIMULATING PUERPERAL ECLAMPSIA.

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PNEUMOCOCCUS Meningitis in the absence of inflammation of the lungs is not a common affection, and its occurrence in the later months of pregnancy is, it may be presumed, of extreme rarity. Eclampsia on the other hand is relatively common, occurring according to different statistics with a frequency varying from 2 in 1000 to 6 in 1000 cases of pregnancy. As a general rule Eclampsia presents a collection of phenomena that makes it tolerably easy to recognise. The sudden onset of epileptiform convulsions, with or without clear prodromal symptoms, in a pregnant, parturient, or puerperal woman immediately gives rise to suspicion; the repetition of convulsions associated with coma more or less marked and persistent, and the observation that the urine is diminished in quantity and contains a notable amount of albumen converts the suspicion almost into certainty. The diagnosis from hysterical convulsions is as a rule readily made by observing the character of the convulsions and of the attendant symptoms. From ordinary epilepsy the distinction is made by a reference to the patient's history and to the condition of the urine. Convulsions due to meningitis may be differentiated from eclampsia by the history of the affection, the presence of hemiplegia or other paralyses, and by the fact that the urine is not diminished in quantity and does not contain albumen. The following case shows the insuperable difficulties that may sometimes be met with in the present state of our knowledge in making a correct diagnosis during life between eclampsia and meningitis. In a woman in the seventh month of

pregnancy the onset of severe and continuous headache ; the occurrence of coma and epileptiform convulsions five days later ; the co-existence of albuminuria ; and the rapid termination in death ; all these taken together, appeared to make the diagnosis of eclampsia certain.

The patient R. S., a married woman aged 35, was admitted to the General Hospital, Birmingham, under the care of Dr. Thomas Wilson at 4.25 p.m. on April 5th, 1901, with the diagnosis of eclampsia of pregnancy. On admission the patient was comatose and cold, the pulse 140 to the minute and very small, respirations 38, and temperature 100° 8F. After being put to bed the extremities gradually became warm ; but pallor turned to cyanosis, the respirations became slower and slower, and 1½ hours after admission the woman died, never having recovered consciousness. Rapid examination showed that the patient was a multipara between 6 and 7 months pregnant. The heart and lungs showed no abnormal physical signs and there was no oedema. Urine drawn off by the catheter was of acid reaction and specific gravity 1032 ; it contained a cloud of albumen and 1·5 per cent of sugar. Microscopic examination failed to reveal casts or blood corpuscles.

The following history was obtained from the patient's aunt :—The woman had had 7 children, all born by natural labours, all healthy except the second who was an idiot ; she was not known to have suffered from any previous kidney trouble. At the time of admission she was supposed to have been about 6 months pregnant and she had been quite well until March 31st, 5 days before admission, when she began to complain of severe headache and of not feeling well. The headache gradually became worse and on the morning of April 4th a doctor was called in for the first time. On the following day, April 5th, the patient was found unconscious in her bedroom and passed through a succession of fits in which the arms and legs twitched, and the face was drawn to the right ; urine and fæces were voided during the attacks. The convulsions continued incessantly until the patient was put under the influence of chloroform. The medical man

who was called in found albumen in the urine and made the diagnosis of puerperal eclampsia. There was no illness of any kind in the house.

Post mortem examination showed that death was due to a purulent meningitis occurring in a pregnant woman; that the meningitis was caused by the pneumococcus; and that there was no disease of the lungs or kidneys. The body was well developed and well nourished; there was no œdema or glandular enlargement. The pregnant uterus extended as high as an inch above the umbilicus; it contained a healthy fœtus of about 6½ months development, 29 ounces in weight, and 13 inches in length. The placenta, placed anteriorly and to the left, was normal in appearance, and so were both ovaries and Fallopian tubes. There was no pericarditis, pleurisy or peritonitis. The heart weighed 11 ounces and showed slight hypertrophy of the left ventricle, but was otherwise healthy. The right lung weighed 19, and the left 15 ounces; in each the upper lobe was œdematous and the lower lobe congested and œdematous. Œsophagus, stomach and intestines were all healthy; the liver, large and fatty, weighed 80 ounces; the spleen was large and diffuent and weighed 12 ounces; the pancreas and suprarenals were normal. The kidneys, each weighing 5½ ounces, were very congested but otherwise appeared quite healthy; the ureters, bladder and urethra showed no abnormal appearances.

The brain was small, weighing 41 ounces; its surface was covered by a dense layer of yellowish creamy pus, which completely invested the whole cerebrum, vertex as well as base, the cerebellum, the pons and the medulla. On section neither the grey nor the white matter showed any naked-eye changes; the ventricles were not unduly distended; there were no signs of tubercle, middle-ear disease, or pneumonia; nor was there any septic focus.

A stained film made from the purulent exudate on the meninges showed among the pus cells numerous diplococci, here and there joined to form short chains of two or three pairs; the individual cocci were pointed, their long axes being from end to

end ; they were encapsuled and retained Gram's stain. A stroke culture on agar after 24 hours incubation at 36° C. showed a nearly transparent film consisting of minute spherical colonies very closely set in the centre of the film but more discrete at the edges. The colonies were found to be composed of diplococci having the same characters and giving the same staining reaction as those seen in the preparation of the pus. The diplococci found both in the stained film and in the culture resembled in size and shape Fraenkel's pneumococcus.

REMARKS.

This case emphasises the importance of making an autopsy complete and especially of never omitting the examination of the brain in any case where cerebral symptoms have been present during life. It would have been easy for a hasty and incomplete examination to have led to the conclusion that here had been a case of eclampsia. There is, so to speak, no constant morbid anatomy for the affection. The changes that are most commonly found affect the kidneys, but in some cases even the most careful examination fails to discover any lesion of these organs, while in many others the changes are insignificant. As a matter of fact, eclampsia is accompanied or caused by a sudden break-down of kidney function, and this may take place in organs that have apparently been previously healthy, or in those that have long been known to be organically diseased. The slighness of the renal affection that was found after death in this case, would therefore have presented no difficulty in accepting the diagnosis of eclampsia.

The relation of the presence of sugar observed in the urine obtained just before death is obscure. Was the glycosuria an independent co-existing affection? Was it caused by the meningitis? Or was it an example of the glycosuria sometimes found in the later months of pregnancy? The glycosuria occasionally found in pregnancy is due to absorption of sugar from the breasts and is usually in small quantity. The notable amount found in the present case was, in all likelihood, dependent upon the

meningitis and connected in some way with the enlarged and fatty liver. What stress, if any, should have been laid upon the observation of such a degree of glycosuria I am unable to say, and this is a point that deserves attention in future observations.

Finally, an important principle of special interest from the obstetrical point of view is illustrated by this case. If any particular form of treatment, as for instance by saline infusion or by morphia had been undertaken and if no autopsy had been made, the failure of the measures undertaken might seriously have shaken one's confidence in their utility. Too much importance, therefore, must never be attached to conclusions as to the futility of any form of treatment based upon cases of the affection in which no post mortem examination has been made.

SURGICAL ABSTRACTS.

ORTHOPÆDIC SURGERY.

BY W. DUNCAN LAWRIE, M.D., F.R.C.S.E.

ARTHRODESIS OF THE SHOULDER JOINT IN INFANTILE PARALYSIS.

L'Arthrodèse Scapulo-Humérale dans le traitement de la luxation paralytique de l'épaule, par le Dr. Bothezat, *Revue de Chirurgie*, 10th May, 10th June, and 10th July, 1901.

Arthrodesis was first performed by Prof. Albert of Vienna, in 1878, on the knee of a child, suffering from paralysis, and has since been applied to all the large joints of the body. It has been most frequently performed on the lower extremity (103 out of 110 recorded cases) and Dr. Bothezat has only been able to find records of six cases in which it has been performed on the shoulder joint. Two were done by Albert, one in 1879 on a girl with paralysis, the other in 1881, for recurrent dislocation.

Wolff of Berlin, and Karewsky have each also reported two cases.

The basis of Dr. Bothezat's paper is three of these cases and three of his own.

When all the muscles of an articulation are paralysed, the joint is relaxed by stretching of its capsule, and permits of passive movement to such an extent as to simulate true dislocation. On inspection of a shoulder so affected it is found to be smaller, more flattened and more elevated than the sound shoulder. Diminution of size is due to atrophy of all the elements of the joint; the raised position to contraction of the trapezius, which is never completely paralysed, the upper segment being innervated by the spinal accessory nerve. On account of the atrophy of the soft parts, the bony points of the shoulder are more prominent, and the capsule of the paralysed joint is so lax that the head of the humerus can be displaced in all directions, upwards to the acromion process, downwards and inwards to the coracoid process, backwards and outwards as far as the posterior border of the glenoid cavity.

With the arm parallel to the chest, the head of the humerus is usually dislocated forwards and inwards. On opening such a joint, the ligaments are found stretched and thinned, the capsule is lax, the glenoid cavity is reduced in size, the tuberosities are hardly visible, the bicipital groove is shallow, and the tendon of the biceps, in cases where the biceps is atrophied, is represented by a thread-like band.

There are two important divisions of paralysed shoulder joints. In the first, the paralysis of the muscles of the articulation is associated with paralysis of the scapular muscles; in the second, the scapular muscles are sound, and the other muscles completely paralysed.

The first class is not amenable to surgical treatment. Clinically, the second class is met with in the following forms:—

(a). The paralysis is localised in the deltoid alone, or, more frequently, in the deltoid, the supra-spinatus and the external rotators, the infra-spinatus, and teres minor. When the

deltoid is alone paralysed, the patient cannot abduct, flex, or extend the arm. The only movement possible is obtained by contraction of the trapezius, which pulls up the shoulder and so tilts out the arm.

When the external rotators are paralysed as well as the deltoid, the arm is fixed in a position of adduction and internal rotation, and, owing to paralysis of the infra-spinatus, the patient cannot execute the lateral movement of the hand by which, in writing, the pen is carried from left to right across the page.

(*b*). The paralysis is localised in the deltoid, the external rotators, and the triceps.

(*c*). The paralysis affects, in addition to the deltoid and the external rotators, all the muscles of the upper arm, both flexors and extensors, and some of the muscles of the fore-arm, the supinator longus most frequently, the extensors more rarely. Flexion and extension of the fore-arm are lost, the fore-arm is pronated, supination is effected with difficulty, and the hand is flexed.

(*d*). The paralysis is total. All the muscles of the upper extremity are affected. The arm hangs a dead weight at the side, and the patient often fastens it to his belt to keep it out of his way.

(*e*). Paralysis similar to the last, but affecting both arms.

Two methods of treatment have been proposed for this condition: (*a*) by apparatus, (*b*) by operation.

Apparatus is contra-indicated in most cases for the following reasons: (1) It is too complicated, expensive and difficult to apply and keep in good order; (2) It tends to produce lesions of the skin owing to the trophic disorder of the skin; (3) The apparatus prevents the action not only of the paralysed muscles whose action they replace, but also that of neighbouring groups of sound muscles.

The object of arthrodesis is to obtain ankylosis of the shoulder joint, so that the movement of the scapula may be transmitted to the humerus. The paralysed muscles are sacrificed and replaced by the sound healthy scapular muscles, and

these by the intermediary of the scapula move the humerus. The scapula is moved in the following ways: (1) It may be made to change its *situation* on the thorax in a vertical or horizontal direction. (2) It may be made to change its *position* by movements of rotation round its own axes. The most important of these movements is that of rotation on its antero-posterior axis. A diagram not referred to by Dr. Bothezat illustrates this, and Professor Arthur Thompson of Oxford has very kindly allowed its use in this article. It is taken from his Handbook on Anatomy (Second edition; Oxford, Clarendon Press, 1889, p. 96).

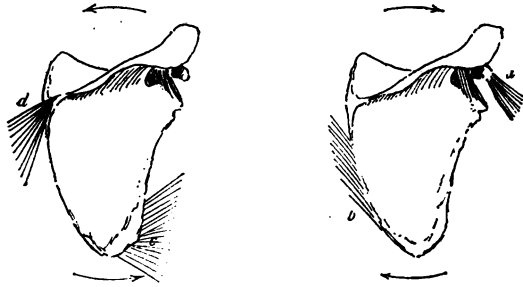


Diagram showing how rotation of the scapula is effected. *a.* Pectoralis minor muscle. *b.* Rhomboideus major. The combined action of these muscles will cause rotation in the direction indicated by the arrows.

c. The fibres of the serratus magnus attached to the inferior angle of scapula. *d.* The lower fibres of trapezius passing up over root of spine. In combination, these portions of the muscles will cause the bone to rotate in the direction of the arrows.

The lower fibres of the trapezius and serratus magnus abduct the ankylosed humerus; the rhomboideus major and the pectoralis minor adduct it.

The success of the operation will depend upon the solidity of the ankylosis and the strength of the muscles of the scapula; the relative position of the bones regulates the direction of the movement.

The indications for arthrodesis are as follows: (1) The muscular paralysis, which is the cause of the luxation, must be a permanent one, and incurable by medical treatment. (2) The

paralysis should be so localised that the muscles of the scapula, elbow and hand are absolutely normal.

The central lesion which produces the paralysis may take any of the following courses. (1) It may affect the cells of the anterior horn temporally without destroying them, and completely clear up. The electrical contractility of the muscles is very little, if at all, modified, and the paralysis is cured quickly. (2) It may produce a more profound lesion, but all the nerve cells may not be destroyed. The Faradic contractility is completely suppressed, and galvanism shows the reaction of degeneration. These paralyses are curable by a prolonged treatment. (4) The lesion may go on to sclerosis, completely destroying the cells in the anterior horn; the resulting degeneration of nerves and muscles will be permanent. Electrical examination gives an absolutely negative result. These forms are incurable.

When the muscle fibres are destroyed and replaced by fatty tissue, no medical treatment will cause their regeneration. Duchenne, however, considers that, even when all trace of contractility has disappeared, there may be healthy muscular fibres embedded in the fat and so surrounded by it that no contraction is visible on electrical examination.

The following should be estimated before deciding that the paralysis is incurable. (1) The result of electrical exploration and the duration of the paralysis. If it is found that there is complete loss of electrical contractility and a history of three years' duration, the paralysis may be considered permanent. (2) The result of medical treatment. When the duration of the paralysis is known, treatment need not be prolonged beyond three or four months. If the duration is not known, it is necessary to submit the case to a longer treatment, never less than six months.

The ideal would be that all the scapular muscles should be normal, but arthrodesis may be usefully performed when one or more of these are paralysed. The most important movement is abduction, and as a sound serratus magnus is necessary for the

movement, this muscle must be very carefully examined prior to operation. It is very often paralysed with the deltoid.

Further, the scapular articulations must be normal, *i.e.*, the acromio-clavicular and the coraco-clavicular, by which the scapula directly articulates with the clavicle, and the sterno-clavicular, which indirectly connects the scapula to the sternum, and plays a very important part in the movements of the shoulder after arthrodesis. The laxity, which is produced in the latter articulation six months to one year after arthrodesis, is the best proof of the importance, which the sterno-clavicular articulation has on the movements of the scapula.

If the condition is complicated by paralysis of the elbow-joint a subsequent arthrodesis of the elbow-joint may be done.

Technique of Arthrodesis.—The author recommends the anterior incision, but begins a little higher up than usual, a little inside the acromio-clavicular articulation, and prolongs it downwards and forwards in the interval between the pectoralis major and deltoid for ten centimetres. The capsule is incised in the bicipital groove, and the coraco-acromial ligament divided. As much of the synovial membrane is scraped away as possible. The head of the humerus is brought out of the incision, the tendon of the biceps being raised with an elevator, and if the muscles inserted into the tuberosities are in the way their insertions are divided. The cartilage is then stripped off the head of the humerus. The glenoid cavity is more difficult to deal with. It may be necessary to make more room by dividing the capsule transversely, and the cartilage is stripped off, and also the glenoid ligament as much as possible. The head is then fixed in internal rotation, with the arm at an angle of 45° with the axillary border of the scapula. Two silver sutures are inserted, one between the head of the humerus and the upper border of the glenoid cavity, and the other between the head of the humerus and the acromion process. The capsule is stitched up, a piece being resected if it be too lax. The arm is immobilised by a plaster bandage. The wound is dressed in ten days, the superficial sutures removed, and the

plaster bandages re-applied for from fifty to sixty days. During this period massage and electricity are applied to the scapular muscles as far as possible. If ankylosis is then solid, the bandage is dispensed with and movements are begun—passive at first, and later, active. Massage and electricity are continued until the movements are free.

The results in the author's three cases appear excellent. The patient is able to carry the hand to the mouth, brush the hair, button the dress, play at ball, etc., and the author thinks that this restoration of movement in a paralysed limb, can with justice be compared to the results obtained by the suture of a divided nerve.

REPORTS OF SOCIETIES.

MIDLAND MEDICAL SOCIETY.

The Seventh Meeting was held on Wednesday Evening, February 19th, 1902, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the chair.

Messrs. David Buchan, M.B., C.M., D.P.H., and H. St. Clair Roberts, M.R.C.S., L.R.C.P., were elected members of the Society.

Angioma of the Globe.—Dr. Martin Young showed this case. The patient was a child, æt. 14. Two and a half years ago the right eye presented a leash of deep coloured vessels on the nasal side of the cornea under the conjunctiva. The nasal half of the retina was detached and very black. Vision = $\frac{5}{8}$. The condition was diagnosed as one of melanotic sarcoma and excision was advised, but the parents refused their consent.

At the present time there was externally a large vascular dark blue mass on the nasal side of the eyeball. The pupil was crescentic, the iris being pushed over towards the temporal side: it could not be dilated with atropine, in consequence of a vascular tongue creeping outwards in the anterior chamber and

restricting the movements. There was only light perception. The patient had suffered no pain at any time. The left eye was normal. A small and very painful tumour, the size of a hazel nut, had appeared eight months ago on the back of the left thigh. It had been excised and examined by Prof. Leith, whose report is appended below. Three months ago a small tumour, about the same size, developed just outside the area of the axillary glands; but this had never given rise to any pain.

The long history was held to negative the diagnosis of sarcoma, and the condition was thought to be one of *nævus* of the choroid. The two small tumours were probably entirely unrelated to the eye condition. There was no history of tuberculosis in the family. The child was well in other respects.

Prof. Leith reported that the tumour examined by him was entirely encapsulated, and showed bands of well-formed fibrous tissue penetrating the substance in every direction, and dividing it into a number of areas like a sponge. These areas were filled with a substance showing an apparently entirely cellular structure, the cells being spindle-shaped and round. The complete fibrous capsule suggested that the tumour was simple, while its apparently entirely cellular character within the above-mentioned areas suggested sarcoma.

Mooren's Ulcer of the Cornea.—Mr. Jameson Evans showed this case. The patient, a woman, *æt.* 49, came under his care in March, 1901. She was then suffering from marginal ulceration of the cornea in each eye, the right being slightly the worse. As the ulcers resisted all the usual topical and constitutional remedies, it became necessary to cauterise them. At the end of two months, and after three cauterisations, the right eye was completely cured, except for a diffuse marginal opacity of the cornea. The left eye, though subjected to varying treatment, including periodical cauterisations, had steadily, though somewhat slowly, progressed, until only a central piece of cornea about the size of the pupil was left uninvolved. The ulceration was at first confined to the upper half of the corneal limbus, but it gradually extended completely round, and then worked

inwards more or less concentrically. The ulcer was limited by a grey infiltrated margin, which was distinctly undermined at certain parts. The central clear cornea became cloudy and infiltrated occasionally, and the eye then became functionally useless. The scar tissue left in the course of the ulcer was vascularised, but its vitality was very low, and it periodically broke down into ulcers. These completely healed over at times for periods of from two to six weeks, and then the disease would break out again and progress as vigorously as ever.

Myoma of Uterus removed by supra-vaginal hysterectomy.—

Mr. J. Furneaux Jordan showed this specimen. The patient, æt. 40, had been married 14 years. She had had no children and no miscarriages. Menstruation had been regular and the quantity not excessive. Six months ago she had noticed a lump in the abdomen which had rapidly increased in size. In the two months during which she had been under observation, the increase in size had been most marked. For some few weeks pain had been severe, and there had also been bearing down in the pelvis. The specimen was a multinodular myoma. One large nodule on the right side invaded the whole of the broad ligament, and, lifting the peritoneum from part of the iliac fossa, lay right underneath the cæcum and vermiform appendix. A second sub-peritoneal nodule occupied the true pelvis, and on the left side a third one invaded the left broad ligament, but not to the same extent as on the right side. The tumour was removed by Kelly's method, the broad ligament tumours being enucleated, one from above down, and the other from below up. The cervix was divided at the level of the internal os. The operation was done on January 15th of this year, and the recovery had been good except for the formation of a stitch abscess about the eleventh day.

Paper.—Dr. Edge read a paper on "The Treatment of Abortion."

The Eighth Ordinary Meeting was held on Wednesday, March 5th, at the Medical Institute, the President, Mr. ARTHUR OAKES, being in the Chair.

Mr. Wm. Garbutt, M.B., Edin., was elected a member of the Society.

Strangulated Hernia through a slit in the Great Omentum.—

Mr. Barling showed a woman, æt. 42, upon whom he had operated for this condition three weeks previously. The patient was admitted to hospital four days after her symptoms began, the first symptom being pain in the lower part of the abdomen, chiefly in the left iliac and hypogastric regions, coming on when the patient was in bed. The symptoms were moderate vomiting, almost but not absolute obstruction and a gradually increasing distension of what appeared to be a huge coil of intestine running transversely across the lower part of the abdomen, leading to a diagnosis of volvulus. At the operation an incision in the middle line revealed an enormous distended coil of large intestine. This had to be emptied before it could be dislocated, and then it was found that about four inches of the ileum, the cæcum, the ascending colon, and a portion of the transverse had become herniated through a slit in the great omentum. A good recovery followed the operation.

Chronic Intestinal Obstruction from a broad band of Adhesion following Herniotomy for a Strangulated Femoral Hernia.—

Mr. Barling also showed a man, æt. 55, who came under his care with symptoms indicating chronic obstruction of the small intestine, namely attack of pain with powerful peristalsis of the small intestine which could be both seen and felt, and occasional vomiting. These symptoms followed herniotomy for a right femoral hernia five months previously. On opening the abdomen in the middle line a strong band of adhesion was found attached at one end to the region of the femoral orifice, and at the other end to the small intestine, a few inches from the ileo-cæcal valve, and the intestine here was densely thickened and much narrowed, and the bowel above very much dilated. The obstruction was overcome by a lateral anastomosis between

the ileum, eight inches from the ileo-cæcal valve, and the cæcum by means of a Murphy button an inch and a quarter in diameter. A good recovery followed.

An Apparatus for obtaining a modified Trendelenburg position.

—Mr. Christopher Martin showed an apparatus for obtaining the raised pelvic position in abdominal operations. It consisted of an enamelled iron frame (eight inches high, three feet long, and twenty inches broad,) which is placed on the ordinary operating table. The upper end sloped obliquely downwards at an angle of 45° . The patient was placed with the buttocks and legs resting horizontally on the frame, and the lumbar and lower dorsal region of the body on the sloping end of the same. The chest, shoulders, and head of the patient lay horizontally on the operating table. The result was that the pelvis was raised about eight inches above the level of the chest, the spine was in a position of acute lordosis, and the abdomen was inclined at an angle of about 45° . Mr. Martin had used this position for several months in performing abdominal sections, and had found it most useful. It was in his opinion an improvement on the ordinary Trendelenburg position. The frame was made for him by Mr. Ash, Edmund street, Birmingham.

Dermoid Cyst of the Ovary.—Mr. J. Furneaux Jordan showed this specimen. The patient, æt. 29, had had one child three years previously. Labour was normal. When seen on Feb. 12th, three weeks ago, she had been five hours in labour; the membranes had ruptured and the waters drained away. All attempts at delivery had failed. On examination it was found that the head was jammed behind the top of the pubes, while behind and below it there was a firm, smooth, tense, elastic swelling, which could not be moved, and which appeared to be an ovarian cyst. If the cervix could have been pulled down so as to bring the posterior fornix within reach, it would probably have been easy to remove it by posterior vaginal cœliotomy; but it was absolutely impossible to do this. The abdomen was opened and the child removed by Cæsarean section; unfortunately just too late to save the life of the child. It was only

then that the cyst could be reached. This was found to be about the size of a cocoa-nut, densely adherent everywhere and dermoid in character. It was removed. The appendages of the other side—the right—were healthy and were not touched. The incision in the uterus was sewn up with silk. The patient made an excellent recovery.

Soft Fibro-Myoma of the Uterus.—Dr. Purslow showed a fibro-myoma which he had removed by abdominal hysterectomy, at the Queen's Hospital. The patient, æt. 55, had not menstruated for nine years. The tumour had been noticed for a few months only, and was undoubtedly growing. It gave a very distinct sense of fluctuation, and was considered to be an ovarian cystoma before the abdomen was opened. The specimen weighed three pounds. The fibroid was found to be growing in the posterior wall of the uterus, and the cavity of the latter was unaltered in size. A histological examination was made by Dr. Stanley, pathologist to the hospital, and he reported that the growth was a fibro-myoma. The patient made a good recovery.

Dr. Purslow drew attention to the rare occurrence of continued growth in a fibroid so long after the climacteric.

Mr. George Heaton read a paper on "The Treatment of Appendicitis."

The Ninth Meeting of the Session was held on Wednesday evening, March 19th, 1902, the President, Mr. OAKES, being in the chair.

The following officers were nominated for election:—As *President*, Mr. Langley Browne; as *Treasurer*, Mr. J. Garner; as *Secretaries*, Mr. Christopher Martin and Dr. Stanley.

Interstitial Keratitis due to Acquired Syphilis.—Mr. Jameson Evans showed a woman, æt. 59, who had been under his care since the end of January, 1902. She was suffering from a typical diffuse keratitis over the lower half of the right cornea. At one part it was infiltrated with fine vessels forming a distinct "salmon-patch." The anterior chamber was shallow, but in

view of the diminished tension and a tendency to iritis, the patient was given atropine to drop in the eye night and morning. This with potass. iodid. and mercury internally were the only means of treatment adopted at the time, but during the more acute stage she had been having hot fomentations as well. She was making satisfactory progress towards recovery under this treatment. Her family history was interesting. She had had six children and two miscarriages. Two of the children had suffered from eye troubles, one of these, a girl *æt.* 22, was shown at the meeting. She showed corneal nebulæ, the result of interstitial keratitis for which she had been under treatment at the Eye hospital eight years ago. She had marked Hutchinson's teeth and was deaf.

Paper Bag for Clover's Inhaler.—Dr. McCardie showed Rickard Lloyd's Paper Bag for Clover's Inhaler. The advantages claimed for this bag are—that being cheap it can be burned after being used once, and therefore, a clean one is used for every case; lightness; and that unlike the rubber bag it will keep in any climate. On trial, it was found that the paper crackled in an annoying way during respiration, and that the stiffly projecting paper is somewhat in the way during operations on the neck and upper part of the trunk. For septic cancerous, tubercular, or foul-mouthed patients' the paper bag would be very useful.

Papilloma of Kidney.—Mr. Gamgee showed a kidney, the pelvis of which was completely filled by a villous papilloma. The patient was a man, *æt.* 50, who had suffered from attacks of profuse hæmaturia for eight years. The kidney was removed by the lumbar route, and the patient made a good recovery.

Mr. Milward read a paper on "Localised intra-peritoneal suppuration and its treatment by drainage," which was illustrated by a series of wax casts of the various intra-peritoneal spaces. Dr. McCardie also read a paper on "A case of faintness," and another of "Vomiting after operation under ethyl chloride narcosis."

REVIEWS.

THE MEDICAL TREATMENT OF GALL-STONES.*

WE have read this book with considerable pleasure. Its title, however, might with advantage be altered, for it deals with the subject of gall-stones in general, though undoubtedly the question of treatment is kept specially in view throughout. The book owes much of its clinical value to the fact that Dr. Keay has himself suffered severely from gall-stones, and his description of their symptoms and effects is particularly interesting and instructive for that reason.

The main purpose of the book, as expressed in its too restricted title, is to protest against the present tendency to resort to operation as soon as the existence of gall-stones has been diagnosed, and to show that in the majority of cases more permanent good can be obtained from judicious medical treatment. Dr. Keay is of opinion that the mortality of the disorder has been considerably increased by the surgical energy of the present day, though of course he does not deny that many cases are met with in which it is necessary to recommend operative interference.

The lines of treatment which the author advocates are based upon the ideas that the formation of gall-stones is largely due to abnormal conditions of the bile, brought about by unhealthy intestinal processes as well as by stagnation, and that even the symptoms of the disorder are to no small extent dependent upon the same abnormal state of the secretion. Indeed he is of opinion that, in the presence of healthy bile and the absence of inflammatory conditions of the gall-bladder and ducts, the mere existence of stones in the bile passages is unlikely to give rise to symptoms. The treatment which he

* The Medical Treatment of Gall-Stones. By J. H. Keay, M.A., M.D. London : Rebman, Limited. 1902.

recommends is therefore directed first of all to the prevention of stagnation, and the usual advice is given with regard to tight-lacing, sedentary habits, &c. Further, Dr. Keay attaches especial importance to increasing the flow of bile, for the purpose both of obviating any tendency to stagnation and of washing away harmful and inflammatory materials. With this object he advocates the eating of hearty and frequent meals, on the ground that the presence of food in the stomach and duodenum is known to give rise to an increased discharge of bile. He also believes in the efficacy of water, and advocates the drinking of hot water two hours after meals, and also the administration every two or three days of a large warm water rectal injection. Calomel and salines are, in his opinion, of material value. Finally the writer is a firm believer in the effects of hard work and anxiety in bringing on attacks of gall-stone colic.

We have in conclusion to express our hearty approval of Dr. Keay's protest against the light-hearted administration of morphia in cases of biliary colic, and, we would add, for the relief of other painful conditions. Dr. Keay rightly says, "When a patient is entrusted with a hypodermic syringe he may sleep soundly enough, but I do not think that there ought to be sound sleep for the medical man who has entrusted him with it." There is every need for some such protest against the free use of morphia, for our own experience has brought us in contact with not a few cases of permanent morphinism due originally to medical administration. Dr. Keay states that he has known the struggle to break off the habit to be "fearful" in the case of a strong-minded man who had used injections only for a week, and he gives a graphic description of his own sufferings in breaking himself of the morphia habit, even after very moderate indulgence in the drug. For the sake of this part of the book alone, we trust that it will be widely read.

A SYSTEM OF PHYSIOLOGICAL THERAPEUTICS.*

THESE are the third and fourth volumes of the series on Physiological Therapeutics referred to in our issue of December, 1901, when the earlier volumes were reviewed. Dr. Parkes Weber has modelled his books on the writings of his father, Sir H. Weber, and has done his work extremely well. There is an enormous amount of information in these volumes and it has the advantage of being presented in a concise and well-written style. We are especially glad to see that Dr. Weber and his collaborator have resisted the temptation to be discursive, and have refrained from padding their work with wordy descriptions of the natural beauties, or defects, of the various health resorts mentioned. What the medical practitioner wants to know, is the place which from a climatic point of view will suit the particular patient under treatment. The natural beauties and historical associations, although not without value, occupy a secondary position in the information which is to guide him in his selection. That information we think he will find in a most readable form in these volumes.

Part I. deals with the physics, physiology, and general therapeutics of climate. In this division, climate, the special effects of atmosphere, altitude, soil, etc., are discussed. The maps showing mean annual isotherms, temperatures, rainfalls, etc., are clear and well printed.

Part II., which fills the rest of Volume III., and part of Vol. IV. consists of descriptions of health resorts. This part is very well done. The numerous health resorts are divided into groups, and just the right amount of description is given to each. The statements concerning the health resorts of Switzerland, the Engadine, Italy, the Riviera, and some parts of America are accurate, and sensibly put, agreeing very closely with the

* A System of Physiological Therapeutics. Vols. III. and IV. Climatology, Health-Resorts—Mineral Springs. By F. Parkes Weber, M.A., M.D., F.R.C.P. (Lond). With the collaboration for America of Guy Hinsdale, A.M., M.D. London: Rebman Limited. 1901.

personal experience of the writer of this article. The maps in this portion of the book are also worthy of special mention.

Part III. deals with climato-therapeutics, and is divided into two sections. Section I. covers the general management of patients at health resorts, and contains many useful hints on the choice of localities and altitudes. Section II., on special therapeutics, treats of the various diseases separately, and the particular health-resorts where patients suffering from them are likely to derive benefit.

The author has some sensible remarks to make on the subject of the open-air treatment of pulmonary tuberculosis, and we wish he had taken the opportunity to describe more fully the method of carrying it out. There is still great ignorance on this matter amongst both the profession and the laity. The commonly conceived notion that the treatment can be carried out anywhere so long as the patient spends certain hours of the day out-of-doors, provided the weather permits, is quite erroneous. It is necessary not only that the patients should practically live in the open air, but also that the atmosphere should be suitable as well as pure. Something is requisite beyond the actual temperature as shown by the thermometer, beyond the absence of mere impurities in the air: it is the sum-total or quality of the air and surroundings, which we are accustomed to designate somewhat vaguely the "climate," that must be suitable. Dr. Weber would have done good service to point this out more clearly, as it might have helped to clear away a good deal of misconception at present existing on this point. Dr. Solly's statement is perfectly true: "It is not the quantity of the air, or the negative virtue of purity that is alone desirable, but the quality of the air, that is also of supreme importance." This might usefully have been taken for the text of a few paragraphs on a subject which is attracting so much attention just now in the medical and public worlds.

ON DISORDERS OF ASSIMILATION, DIGESTION, ETC.

SOME time ago Sir Lauder Brunton published in book form, under the title "Disorders of Digestion," a large number of scattered papers written or delivered at different times, but all having some bearing upon the subject of which he is well known to be a master. He has now collected a second series of 33 papers on similar subjects. As these were written at different times and for very varying purposes there is necessarily not a little repetition, but the author truly pleads in his preface that such repetition only serves to lay emphasis upon the ideas which have assumed in his mind especial importance.

It would be impossible to read these papers without gaining many and most valuable hints on the causation and treatment of the disorders of digestion and assimilation, and we strongly recommend the book to the notice of practitioners. For our own part, we prefer those sections which are most scientific and least speculative—in other words, those which are written in the least popular strain; but in this many will differ from us. In his clinical lectures and addresses to medical societies, the writer displays a most remarkable ingenuity in suggesting explanations for well-known occurrences, and the endeavour to see into the causes of things and to place medical treatment on a basis of reason is one of the most striking characteristics of Sir Lauder Brunton's published works. Nevertheless, we think that this ingenuity is not infrequently carried too far, as when—to take a single example—he suggests that the good effect of olive oil in the treatment of gall stones may possibly be due to the suggested fact that the oil "makes the bile thicker and makes the stones sit quietly in the gall-bladder." The tendency to such speculations appears to us to be somewhat too freely indulged in, and this is the only fault with which the book can be charged.

The great variety of the papers renders it difficult to single out any for special remark. The longest contribution is that on the

* On Disorders of Assimilation, Digestion, etc. By Sir Lauder Brunton, M.D., D.Sc., LL.D. (Edin. and Aberd.). F.R.S., F.R.C.P., Physician to St. Bartholomew's Hospital. London: Macmillan and Co., Limited. 1901.

influence of stimulants and narcotics in health, which is reprinted from Messrs. Cassell's "Book of Health," and covers 115 pages. It is a remarkable piece of work, and deals in every conceivable aspect with the influence of alcohol on the human body, as well as with that of other stimulants and narcotics. The remaining papers may roughly be classified as either scientific or clinical. Of the former, we should be inclined to pick out those on the albuminous substances which occur in the urine in albuminuria, on the actions of alcohols and aldehydes on proteid substances, and on the presence of a glycolytic enzyme in muscle, as the most important. The clinical articles are much the more numerous and are most characteristic of the writer. Of the many excellent lectures and addresses, those on abdominal pain, on the use of bromide of potassium and salicylate of sodium in headache, and on some difficulties of diagnosis in hepatic disease, may perhaps be singled out for special mention. But where all are so good, it is not an easy matter to accord special praise.

A TEXT BOOK OF PHARMACOLOGY.*

THE author of this work has produced a book on the action of drugs which is based as far as possible on experimental facts and deductions from these. The importance of an acquaintance with experimental methods in their relation to applied medicine is strongly emphasised throughout, with a view to a more rational basis in the treatment of disease. The treatment of poisoning is also dealt with in the same way.

The work is divided into four parts. Part I is devoted to an outline of the anatomy and chemistry of plants, pharmaceutical methods and preparations, and a useful section on incompatibilities and solubilities. Prescription writing is more fully dealt

* A Text Book of Pharmacology, including Therapeutics, Materia Medica, Prescription Writing, etc. By Thorald Sollmann, M.D., Assistant Professor of Pharmacology and Materia Medica, Western Reserve University, Cleveland, Ohio. Philadelphia and London: W. B. Saunders and Co.

with, and many useful hints are given. Part II, which comprises the bulk of the book, contains the sections on pharmacology, therapeutics, and materia medica. This again is divided into two sections, the first dealing with drugs whose main action occurs after absorption, the second with those whose main action is local. The drugs are here arranged into groups, distinguished by a few typical actions which vary only quantitatively in the individual members. Neither the chemical composition nor any other one characteristic is taken to determine the groups, but those having most characters in common are placed together in groups, such as the convulsant series, alkaloidal hypnotics, cocain group, irritants, emollients, etc. The sections dealing with dissociation and the ion actions of salts, acids, and alkalies are very clearly explained.

Each group contains (1) a list of members, (2) a summary of actions, (3) the actions in detail, (4) absorption, fate and excretion, (5) a comparison of the members of the group, (6) toxicology, (7) therapeutical uses, (8) the materia medica of the British and United States Pharmacœias, and other useful non-official preparations.

This method of grouping is a great help to the memory, and serves to bring out forcibly the relations of one drug to another. In many instances the main physiological functions of the organs influenced by the drugs are also shortly yet lucidly described.

Part III contains a series of valuable practical exercises for students, both in chemistry and on animals, with full directions for the carrying out of these. The doses of the more important drugs required by different animals for the demonstration of the effects are also given. The careful performance of such a course of experimental exercises should produce an excellent working basis and solid foundation for the future practical application of remedies, and lead to a rational method of prescribing, and the avoidance of incompatibilities.

Part IV deals with the methods of analysing the causes of pharmacological actions.

Although the book almost throughout reminds one more of a laboratory than the bedside, the clinical aspect of drugs is by no means lost sight of, and there is a vast amount of careful experimental observation in it, which, if utilised more frequently in its clinical bearings, would inevitably lead to less empirical therapeutical treatment. A considerable number of illustrations and diagrams are interspersed throughout the text.

A NEW TEXT-BOOK OF MEDICINE.*

DR. SYERS is certainly to be congratulated on having written a text-book which does not consist in a mere *résumé* of books previously published. He has struck out a somewhat new line, and while giving to the medical public a treatise which is written in a semi-popular style, he shows on nearly every page that he has a thorough practical knowledge of his subject, and having the courage to cast aside hampering tradition, states with no uncertain voice what is knowledge in medicine and what is mere hypothesis. Medical practitioners will be grateful to him for this; but we are not so sure that students will be equally appreciative. This is not a "cram" book by any means, so it may not be attractive to students for this very reason; but equally for this very reason we can strongly recommend it to their notice. Hypothesis holds a dominant position at the present time in much of the writing that appears on medical subjects, and the author's attitude with regard to it may be instanced by quoting his remarks on the causation of ulcers of the stomach and the duodenum. "Many ingenious theories have been elaborated to explain the facts, but none of them are

* The Theory and Practice of Medicine. By Henry Walter Syers, M.A., M.D. (Cantab.), Senior Physician to Out-Patients to the Great Northern Central Hospital. In 2 Vols. London: Rebman Limited. 1901.

(*sic*) satisfactory." This sentence, with the necessary correction, would apply to much that finds a place in the ordinary run of medical text-books.

The first volume only of this work has reached us up to the present. It deals with Infectious Diseases and Affections of the Heart and Vessels, Respiratory Organs, Digestive System and of the Kidneys. Some of the sections, or short notices, are very brief, and seem to belong rather to a popular encyclopædia than to a scientific work. Dr. Syers, although not old fashioned by any means, upholds remedies and methods of treatment, which have stood the test of time, and is very sceptical with regard to those new remedies, which seem to depend for a reputation upon the unflagging advertisement of the proprietors.

We note especially the following statements,—that the wooden stethoscope is the only one of real value, the binaural being unsatisfactory and not to be placed in the hands of students at all; that Widal's and Ehrlich's tests in Enteric Fever are of little value; that both menthol in olive oil and lactic acid are of no permanent value when applied locally in tubercular laryngitis; and that percussion of the liver area as a means of determining the size of the organ is absolutely untrustworthy.

It will be seen from this that the author's teaching, if unconventional, is at any rate sound.

DISEASES OF THE INTESTINES.*

NOTWITHSTANDING the extreme importance of intestinal disorders, there is a certain paucity of literature on the subject. Special conditions, such as intestinal obstruction, or special portions, such as the rectum and the appendix, have been well nigh worked out. Aid monographs on them are very numerous. Morbid conditions of the whole intestinal tract have, generally speaking, been only studied collectively in text-books.

Dr. Hemmeter's work (to appear in two large volumes, and of which we have received the first) is likely to become the standard in diseases of the intestines. We are largely indebted to American physicians for pioneer work on the whole subject of digestive physiology, pathology, and diagnosis. The classic observations of Beaumont on the case of Alexis St. Martin have been invaluable as laying a foundation for all subsequent work.

Dr. Hemmeter intends his book to be complete. The first part treats of the anatomy, histology, physiology, pathology, and bacteriology of the intestines. It also includes methods of diagnosis, and the manner in which the author details his facts is very clear. We may even go so far as to say that some of the chapters would rank as monographs if published separately, and we may instance that on the "Bacteriology of the Intestines" as particularly valuable.

The first part of the work closes with a chapter on "Duodenal Intubation." This is a method of clinical examination, which so far has not found much way in this country. The author admits that sufficient details have not been accumulated to warrant any general statement, as to the value of the method. He maintains it is a harmless procedure.

The second part is devoted to Diet, more particularly in relation to certain definite disorders, as Typhoid, Enteritis, Intestinal Tuberculosis, and many others.

* Diseases of the Intestines. By John C. Hemmeter, M.D. Vol I.
London: Rebman Limited.

What to most readers will be the interesting part of the work begins with Part III—Intestinal Clinic. The subjects covered are diarrhœa, constipation, intestinal colic, meteorism, intestinal indigestion, enteritis, dysentery, ulcers of the intestine, and intestinal neoplasms. In each case there is a full description, and the treatment is carefully detailed, not only medical, but also dietetic. Sometimes we notice a slight tendency to the "specialist" style—some concomitant condition of considerable importance in the case being dismissed in very few words.

As a work of reference, we can safely say that it will cover a subject of every day importance, and that in a most complete manner, and so we confidently recommend Dr. Hemmeter's work to those who desire a more extensive acquaintance with intestinal disease than the ordinary text-book or system of medicine will furnish. There are many superb plates and illustrations—so characteristic of American publications, and which compensate for some differences in orthography which strike the English reader, as well as the use of "shall" and "will."

THE PRINCIPLES AND PRACTICE OF MEDICINE.*

It seems almost superfluous to review a book which has rapidly reached its fourth edition and taken such a foremost place in medical literature as Dr. Osler's. There is no school of medicine in the United Kingdom where we do not find it in use, especially among the more advanced students, and as a practical work for diagnosis and treatment those who know it best are most emphatic in its praise. Although the last edition appeared in 1898, Dr. Osler is too active a worker in medicine not to find some modification, or some addition advisable, to keep the work well up to date. Thus in certain subjects which he has made

* The Principles and Practice of Medicine. By William Osler, M.D., F.R.S., F.R.C.P. Fourth Edition. Edinburgh and London: Young J. Pentland.

essentially his own we find the more marked differences in the recent edition. The article on Typhoid Fever is a case in point. It has been almost completely re-written, in consequence no doubt of a very extended study in which the writer has been engaged for some time past. Malaria is another subject which has much to owe to Dr. Osler, and we have now the results of his most recent labours in so very important a disease. We call to mind a recent and valuable contribution to current medical literature in reference to Cerebro-spinal Fever, and we are therefore prepared to find it among the articles which the author has re-cast for his fourth edition. We re-read with interest articles that have not needed much if any revision in a new edition, and they confirm an impression made in the early days of the work that it is original, reliable, and well-balanced. We know of no book so free from tradition; each subject is weighed by itself, and in this consists the charm and value of the book for the student and practitioner of medicine. We must congratulate the publisher on the very excellent style of the work, every way worthy of one of the leading text-books of medicine.

NOTHNAGEL'S ENCYCLOPEDIA OF PRACTICAL MEDICINE.*

SAUNDERS' ENGLISH EDITION.

THE second volume of Messrs. W. B. Saunders' English Edition of Professor Nothnagel's Encyclopedia of Practical Medicine is a worthy successor to the opening volume of the series, which we reviewed in a recent number. The infectious

* Nothnagel's Encyclopedia of Practical Medicine. Variola, Vaccination, Varicella, Cholera, Erysipelas, Whooping Cough, Hay Fever. By H. Immermann, Th. von Jurgensen, C. Liebermeister, H. Lenhartz, and G. Sticker. Edited, with Additions, by John W. Moore, M.D., F.R.C.P., Professor of the Practice of Medicine in the Royal College of Surgeons in Ireland. Authorised Translation from the German, under the Editorial Supervision of Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Philadelphia and London: W. B. Saunders and Co. 1902.

fevers of which it treats, whilst hardly analysed with the extreme minuteness characteristic of the treatise on typhoid fever, are yet described with an amount of detail which gives them altogether exceptional value. Not only are the clinical pictures unusually vivid, but the pathology and pathological relations of the various diseases are dealt with from a very broad point of view. On the whole, we have again to express our opinion that these two books on the infectious fevers stand considerably ahead of any similar work in the English language.

The article on Variola is from the pen of Dr. H. Immermann of Basel, who has had wide opportunities for studying the disease. We note that he is inclined to accept provisionally as the specific micro-organism of small-pox, the sporozoon to which the name *cytorrhcytes variolae* has been given, and which has been investigated and described by von Guarnieri and Van der Loeff. Quite recently, L. Pfeiffer has confirmed the work of these two observers, and there seems every prospect that further investigation will establish the relation between the sporozoon and the disease. Dr. Immermann's clinical description of variola is very graphic, and indeed the article throughout is of great merit. The same writer is responsible for the chapter on Vaccination, and no better or more convincing statement of the efficiency of that much controverted proceeding could be written.

The article on Varicella by Dr. von Jurgensen does not call for special remark, for the subject hardly lends itself to such detailed treatment as is characteristic of the Encyclopedia. It is followed by an admirable and most minute account of Asiatic Cholera by Dr. Liebermeister of Tübingen. In dealing with the question of etiology the writer gives prominence to his belief in the probable existence of an intermediate stage outside the body, in which, and in which alone, the parasite is able to develop its power to infect the human subject. By this means he endeavours to bring into coincidence the views of those who maintain the contagiousness of the cholera poison, and those who believe that peculiarity of locality is the essential factor in

the causation of the disease. In explaining the extreme collapse of an attack of cholera, the writer gives first place to the drain of fluid from the tissues, and he insists that at the time when the constitutional symptoms are at their height, absorption from the intestine is at a standstill, owing to the profuse exudation into its lumen. The suppression of urine he is also inclined to attribute mainly to circulatory failure, though he would also allow the possibility of a later toxic degeneration of the kidneys. In treatment, Dr. Liebermeister relies on opium, and later, on general stimulant measures, the subcutaneous injection of saline solution and rectal injection of warm tannin solution. He has apparently no faith in the purgative treatment so warmly advocated by the late Sir George Johnson.

Dr. Hermann Lenhartz of Hamburg enters with great fullness into the subject of Erysipelas, and this article with the chapter on Cholera are, we think, the two best sections of the book. The article is one which is particularly worth reading. Much praise may also be awarded to Dr. Sticker's account of Whooping Cough. Finally, the latter contributes a most interesting account of the so-called "Bostock's Summer Catarrh," or Hay Fever. Dr. Sticker is firmly convinced that this curious complaint will eventually be placed amongst the specific infectious diseases, and believes that its incidence at a particular season of the year is to be explained by the development of the specific poison only under certain conditions of temperature. He would allow to dust and pollen the role only of exciting paroxysms by mechanical irritation of the already hypersensitive mucous membranes.

The volume has been admirably translated by Dr. J. W. Moore of Dublin, who has contributed a few additions to the original text. These additions are marked off by inclusion in brackets, a practice which, whilst declaring their origin, is not without its inconveniences.

ROUGH NOTES ON REMEDIES.*

THERE is but little alteration in the new edition of Dr. William Murray's well-known and much appreciated book, beyond the addition of a chapter on Rothbury as a health resort. Rothbury is a small town lying mostly on the northern bank of the river Coquet, a river running from west to east in one of the valleys of Northumberland. The town faces south and lies from 200 to 300 feet above the level of the sea. It is well protected to the north west and east by hills, and has a climate which is both bracing and mild. Dr. Murray believes that it possesses unusual advantages as a health resort, and that, whilst enjoying something of the mildness of the Devonshire climate, it has none of the enervating effects of the southern resorts.

For the rest, the book stands practically unchanged, and no further testimony is needed of its value. It is full of wise, practical advice, and many of the hints on treatment are of the greatest clinical importance. Our own experience does not, in all cases, coincide with that of Dr. Murray, notably with regard to the employment of large doses of arsenic in chorea. We must confess that we have been greatly puzzled by the want of success with which this treatment has been attended in our own hands. Dr. Murray's records are, however, convincing that there are some cases at any rate which respond readily to this method of treatment, but we can assure him that there are not a few which are equally resistant.

THE JOURNAL OF OBSTETRICS AND
GYNÆCOLOGY OF THE BRITISH EMPIRE.

WE have received from Messrs. Baillière, Tindall and Cox the first number of a new monthly periodical entitled the *Journal of*

* Rough Notes on Remedies. By Wm. Murray, M.D., F.R.C.P., Lond.
Fourth Edition. London: H. K. Lewis, 1901.

Obstetrics and Gynaecology of the British Empire, and published under the editorship of Mr. Alban Doran, with the aid in special departments of Drs. Berry Hart, F. W. Kidd and W. J. Sinclair. With these are associated a small Editorial Committee of which we are glad to see that Dr. Malins is a member. There are further 58 collaborators representing the chief centres of Great Britain and the Colonies. The first number contains five original articles by Drs. Cullingworth, Horrocks, Berry Hart, Sinclair and Murdoch Cameron. It further contains a critical essay on anæsthesia by subarachnoid injections of cocaine in the lumbar region by Mr. Arnold Lea, a review of current literature, the transactions of two societies, and reviews of recent books. The journal is unconnected with any society, and in this respect stands alone amongst the British periodicals on these subjects. It should have a successful future before it.

TWO BOOKS ON FIRST AID.*

MESSRS. JOHN WRIGHT & Co. send us two books concerned with the principles of first aid. One of these is the ninth edition of the late Mr. Pye's well-known little work on bandaging, surgical dressing,* etc, which is mainly a re-issue of the corresponding parts of the same author's larger treatise on Surgical

* Elementary Bandaging and Surgical Dressing, with directions concerning the immediate Treatment of Cases of Emergency. By the late Walter Pye, F.R.C.S., Surgeon to St. Mary's Hospital. Revised by Thomas Carwardine, M.S., F.R.C.S., Assistant Surgeon, Bristol Royal Infirmary. Ninth Edition. Bristol: John Wright & Co., 1901.

First Aid to the Injured and Sick: an advanced Ambulance Handbook. By F. J. Warwick, B.A., M.B. Cantab., M.R.C.S., Surgeon-Captain, Volunteer Medical Staff Corps, London Companies; and A. C. Tunstall, M.D., F.R.C.S. Ed. Surgeon-Captain commanding the East London Volunteer Brigade Bearer Company. Bristol: John Wright and Co., 1901.

Handicraft. The present edition has been carefully revised by Mr. Thomas Carwardine, and, while retaining all the characteristics of the original work, has been brought thoroughly up to date. The second of the two books is an excellent first aid handbook, of a somewhat advanced type, by Drs. F. J. Warwick and A. C. Tunstall. Both of these writers have gained practical experience of what is needed in such a book in the posts which they hold in connection with the London Volunteer Brigades, and they have themselves been lecturers on ambulance work. We congratulate them on the excellence of their book.

INDEX-CATALOGUE OF THE LIBRARY
OF THE SURGEON-GENERAL'S OFFICE, UNITED
STATES ARMY.*

THE present volume of the Index-Catalogue of the Surgeon-General's Library at Washington is the sixth of the second series, and carries the catalogue well into the letter H. Its contents represent 5,865 volumes and 14,296 pamphlets. We have repeatedly expressed our opinion of the immense value of this work. The thanks of the medical world are due to its author, Surgeon-Major James C. Merrill, as well as to the authorities under whose auspices it is carried out.

* Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Second Series. Vol. VI. Washington : Government Printing Office. 1901.

SURGICAL APPLIED ANATOMY.*

At this date no words of ours are necessary in praise of this book. It has long held the foremost place among the smaller works on Surgical Anatomy, and it has done so for many reasons; chiefly, in our opinion, because while containing an enormous number of facts, it can in no way be called a cram-book. What it does is to show the student that, after all, Anatomy is not a dull uninteresting subject, but that all its facts have an important bearing on Surgery. It teaches the surgeon, too, the extreme importance of retaining a good knowledge of anatomy. The present edition has been thoroughly brought up-to-date and many new engravings have been inserted, while the size of the volume has wisely not been increased.

THE BRADSHAW LECTURE ON PROGNOSIS IN RELATION TO DISEASE OF THE NERVOUS SYSTEM.†

IN his Bradshaw Lecture for 1901, Dr. Judson Bury has made as much as could possibly be expected out of a very difficult subject. From the point of view of clinical interest prognosis in nervous disease is not a bad subject, but we are bound to admit that not very much of practical importance arises from its discussion. For this, however, the author is not to blame. Dr. Bury treats of prognosis in relation to size, situation and nature of the lesion, in relation to symptoms, and finally in relation to treatment. About the first and last of these subdivisions there is necessarily but little to say, but the second is

* Surgical Applied Anatomy. By Sir Frederick Treves. New edition. Revised by the author with the assistance of Arthur Keith, F.R.C.S. London: Cassell and Co. 1901.

† The Bradshaw Lecture on Prognosis in Relation to Disease of the Nervous System. By Judson S. Bury, M.D., Lond., F.R.C.P., Physician to the Manchester Royal Infirmary. Manchester: Sherratt and Hughes.

illustrated by the relation of many interesting cases, and for this reason is of considerable clinical value. Some of the problems in diagnosis which he propounds appear to be quite insoluble in consideration of their final result, and other instances of the temporary falsification of diagnosis by a fleeting improvement, or even recovery, are recorded. On the whole the main lesson to be learnt from the lecture is that of caution in prognosis, even in the face of apparently certain and hopeless conditions.

THE FOUR EPOCHS OF WOMAN'S LIFE.*

WE do not as a rule care for medical books written for the instruction of the public. But we must admit that the advice in Dr. Galbraith's *Four Epochs of Woman's Life* is in the main wise and wholesome, and that the subject is one which perhaps justifies its publication. We are, however, not a little puzzled by the section on the marriage relation. The book is written exclusively for the perusal of women: yet we are at a loss to understand what good they could derive from the particular section to which we refer. The fact is that Dr. Galbraith—by a curious twist in logic to which we shall perhaps be excused if we apply the term feminine—has taken the opportunity to express views which are obviously intended for the male sex, but which, even if true, when read by women could only serve to accentuate the difficulties of early married life. Much practical advice might be given on this subject, and we trust that Dr. Galbraith will re-write this section in future editions.

* *The Four Epochs of Woman's Life.* By Anna M. Galbraith, M.D., Attending Physician Neurological Department, New York Orthopedic Hospital and Dispensary. With an Introductory Note by John H. Musser, M.D., Professor of Clinical Medicine, University of Pennsylvania. Philadelphia and London: W. B. Saunders and Co.

THE EDINBURGH MEDICAL JOURNAL.*

WE have to acknowledge the receipt of the tenth volume of the new series of the Edinburgh Medical Journal, edited by Dr. G. A. Gibson. The journal is too well-known as being in the very front rank of British medical periodicals to need any praise from us. It is of course primarily the representative of the Edinburgh school of medicine, but its contributors are by no means confined to that school, as a glance at the list of original articles will show. The list contains a large number of papers of scientific and clinical importance.

PRACTICAL HISTOLOGY.†

THIS book is to a certain extent a portion of the "Practical Physiology and Histology," by Prof. M. Foster and the author, the histological part of which has been transferred to the present work and considerably enlarged.

The writer's long experience as a teacher is more than a sufficient guarantee of the value of his "Practical Histology." All the methods given have been personally tested by him, or under his supervision, and may therefore be accepted as demonstrating some important histological feature. There are so many methods and modifications of methods now, that even the advanced student requires some judicious advice, unless he would waste his time and material, in the preparation of microscopical specimens. We strongly recommend Dr. Langley's work on histology to both students and teachers.

* The Edinburgh Medical Journal. Edited by G. A. Gibson, M.D., F.R.C.P., Edin. New series; Vol. x. Edinburgh and London: Young J. Pentland.

† Practical Histology. By J. N. Langley, M.A., D.Sc. London: Macmillan and Co.

THE SANITARY INSPECTOR'S HANDBOOK.*

MR. TAYLOR'S Sanitary Inspector's Handbook has acquired a well deserved reputation for thoroughness and usefulness in this particular department.

In the present edition the general plan of the work has remained unchanged, but the text has been amplified. Recent legislation has rendered necessary some insertions, more especially in reference to bye-laws of the London County Council. We strongly recommend those going in for the various examinations for Diplomas in Public Health to become conversant with the contents of this work. It is not exactly a text-book of public health, but rather a manual of applied sanitary science, and a useful compendium of the Laws relating to Sanitary questions.

THE PRINCIPLES OF HYGIENE.†

THE aim of this work is to furnish the medical practitioner and student with a simple but reliable manual of public health. The book does not attempt to be exhaustive, but owing to the clearness of the style, we feel sure that the ordinary professional man will obtain a very satisfactory and, for all ordinary purposes, adequate knowledge of the subject of hygiene. The lay reader, too, will benefit by a study of Dr. Bergey's work. There are many larger books on the subject of sanitary science, which are too fully detailed for the architect and builder, but in the present one we believe they will find many practical suggestions that cannot fail to be of much value in their respective departments. Sound and practical is the verdict on the book.

* The Sanitary Inspector's Handbook, By Albert Taylor. Third edition. London : H. K. Lewis.

† The Principles of Hygiene. By W. H. Bergey, A.M., M.D. London : W. B. Saunders and Co.

DOSE BOOK AND MANUAL OF PRESCRIPTION
WRITING.*

IN this edition of Dr. Thornton's work certain changes have been made. There are additions to the chapters on "Prescription Writing," and incompatibilities and appropriate references have been introduced in the text as to the use of many of the most important and reliable serum preparations. The book aims at being thoroughly practical in every way. We have pleasure in bringing it to the notice of our readers.

A LABORATORY COURSE IN BACTERIOLOGY.†

THIS volume has been prepared as a guide to the beginner in bacteriology, and is so written that it will prove of use to the lay student as well as the medical, for, as the writer remarks, this branch of natural science can no longer be regarded as the exclusive domain of the medical school. The book does not pretend to be a manual, its aim being less ambitious. It contains many practical suggestions, and is likely to prove useful to the student.

THE PATHOLOGY AND TREATMENT OF SEXUAL
IMPOTENCE.‡

WE have received a copy of the third edition of Dr. Vicki's work on Sexual Impotence. It is evident that the author has devoted a considerable amount of time and patience to this

* Dose Book and Manual of Prescription Writing. By E. Q. Thornton, M.D. Second edition. London and Philadelphia : W. B. Saunders & Co.

† A Laboratory Course in Bacteriology. By Frederic P. Gorham, A.M.

‡ The Pathology and Treatment of Sexual Impotence. By Victor G. Vecki, M.D. Third Edition. London : W. B. Saunders and Co.

question, but we cannot quite subscribe to all his views on either pathology or treatment. The writer, we are inclined to think, is given to drawing too hasty inferences. At the same time the book contains some useful information.

THE SOCIETY OF MEDICAL PHONOGRAPHERS.

We are asked to state that the next Annual Shorthand Examination, for which two prizes of £5 each will be offered, will be held on May 20th, 1902, at any provincial medical centre in the United Kingdom at which not fewer than three candidates shall present themselves. The competition will be open without entrance fee to any registered medical student who has not taken a first prize at one of the Society's previous examinations. One of the prizes will be awarded to a first-year student; the other to a student of older standing.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

THE DOWSING ELECTRICAL RADIANT HEAT AND LIGHT APPARATUS.

MESSRS. SALT & SON have forwarded to us particulars of their installment of the Dowsing apparatus for the treatment of rheumatic affections, sciatica, etc., by dry heat. The apparatus consists of a bed surrounded by powerful electric lamps, the heat from which is reflected on to the bed by metal reflectors. By this means, the whole body, or any part desired, can be exposed to a very high temperature, which, being dry, is borne without discomfort. For the application of heat to

particular joints, smaller pieces of apparatus are provided. The treatment is carried out under the supervision of a nurse specially trained in the use of the apparatus.

We have received from Messrs. Burroughs and Wellcome specimens of "Soloid" Sodium Hydroxide gr. 2, and of "Soloid" Pyrogalllic Acid gr. $\frac{1}{2}$. These products have been introduced with the view of providing a ready means of estimating the degree of oxygenation of a sewage effluent. It is generally admitted that a sewage effluent, in order to be satisfactory, should be well charged with oxygen, whereas if the effluent contains little or no free oxygen it will not act satisfactorily.

The following directions are given for the carrying out of the test:—Fill a wide-mouthed bottle, holding about four ounces, with the effluent as it runs from the beds; drop in one "Soloid" product of each reagent, and insert the stopper carefully and in such a way as not to include any bubble of air. Shake the bottle for about half-a-minute and note the effect produced. If the liquid remain colourless or only faintly coloured, the oxygenation is not satisfactory. If the liquid assume a rich red-brown colour, the oxygenation is satisfactory.

Messrs. Burroughs and Wellcome also send us samples of a new tabloid containing gr. $\frac{1}{8}$ of yellow iodide of mercury. The salt is a pure mercurous iodide, and, unlike the green salt sometimes used for therapeutic purposes, contains no free mercury. It is therefore a more definite and reliable preparation than the green iodide.

New Books, etc., Received.

From Charles Griffin and Company, Limited—

Forensic Medicine and Toxicology. By J. DIXON MANN, M.D.,
F.R.C.P. Third Edition, revised and enlarged.

From the Scientific Press, Limited—

Burdett's Hospitals and Charities, 1902.

From John Wright and Company—
The Medical Annual, 1902.

From Henry Kimpton—
The Treatment of Neurasthenia. By A. PROUST and GILBERT BALLET.
Translated by PETER CAMPBELL SMITH, L.R.C.P., L.R.C.S., Edin.

From R. and R. Clark, Limited—
The Causes of Death among the Assured in the Scottish Widows' Fund
and 'Life Assurance' Society from 1874 to 1894, inclusive. Reported
by CLAUD MUIRHEAD, M.D., F.R.C.P.E.

We have also to acknowledge the following—
Ueber die Verwendbarkeit des Wasserstoffs-superoxyds in der
Zahnheilkunde. Vortrag gehalten von Dr. Med. Rud. Dorn.

Foreign Bodies accidentally left in the Abdominal Cavity. By AUGUST
SCHACHNER, M.D.

The Uses of Tuberculin. By CHARLES DENISON, A.M., M.D.
Birmingham Free Libraries. List of Books, Pamphlets, and Magazine
Articles on British South Africa, etc.

Injuries of the Eyelids and Eyeballs, and other Papers. By L. WEBSTER
FOX, A.M., M.D.

Birmingham General Hospital. 122nd Annual Report.

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review, should be sent direct to the Printers and Publishers,
Messrs. Hall and English, 36, Union Street, Birmingham.

THE
BIRMINGHAM MEDICAL REVIEW.
MAY, 1902.

ORIGINAL COMMUNICATIONS.

ABSTRACT OF A CLINICAL LECTURE ON DISEASES
OF THE BREAST.*

BY WILLIAM F. HASLAM, F.R.C.S.,
SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM.

Gentlemen,

The diagnosis of the nature of swellings situated within the breast is often attended with considerable difficulty; indeed, unless care be taken, it is possible to be quite mistaken as to the nature of the growth, and to remove the organ for what is supposed to be a solid tumour, and to find only a chronic abscess, that should, of course, have been treated by less radical measures. I propose, therefore, to draw your attention to-day to some points in the method of examining a breast, that will enable you to elicit the facts of the case, and to form an opinion based on a careful examination of the case.

It is necessary, first of all, to briefly draw your attention to some points in the anatomy of the breast, that have a bearing on the question.

The breast, which varies much in size in different people, is a superficial and apparently well-defined organ. Now it is

* Delivered at the Hospital, May 1st, 1902.

important to remember that it is not nearly so well-defined as it appears to be. There are often small out-lying masses of breast tissue that push out into the fat around the circumference of the breast, or on to, or even through, the fascia on which it rests, and that these may easily be left behind when removing a breast, unless their possible presence is remembered. Moreover, these processes may themselves be the seat of morbid growths, so that a tumour may be placed quite at the margin, or even beyond the margin of the breast. Small fibrous processes, forming suspensory ligaments, pass from the interstitial tissue of the breast to the skin, and anything that will drag on or cause contraction of these will produce dimpling of the skin. This dimpling is often seen in cases of carcinoma, and is a most valuable sign. The lymphatics pass principally to the axillary glands; some few enter the thorax.

Looking therefore to the intimate association of the breast with surrounding parts, it is evident that a cancerous growth may involve not only the neighbouring parts, but that it may spread into the fat around the main mass of the organ, or into the skin over it, or the fascia and muscle on which it rests.

Remember also that in cancer of the breast, the growth destroys and takes the place of the breast tissue to a very large extent, so that it is possible to find a large mass of cancer in a breast which is no larger than the healthy one. This is especially the case in the hard kind of cancer, and is seen in its most marked form in those cases where the deposit spreads widely in the skin over the breast, forming what is known as *cancer en cuirasse*, and the breast is squeezed between the deposit and the chest wall.

It is necessary to make a careful and systematic examination of every case of tumour of the breast that you are asked to see, for unless this is done you will frequently make mistakes. Before examining the breast, have a good look at the patient herself, and ascertain her age. The age is to some extent of interest, for without being too dogmatic on this point, one may say that it is unusual to find malignant growths before 30, and

that after that time they are more common than innocent ones. Useful information may be obtained by noting the condition of the patient, for a carcinoma will run quite a different course in a thin spare woman to what it will in one who is stout and florid. In the former it may last for years, for its epithelial elements seem to be unable to make any headway, and its fibrous tissue contracts so that the whole is rather an atrophic than a growing mass. In the latter, there seems to be often just the soil that is necessary for its growth, and from time to time one sees these tumours progress with frightful rapidity. Note then, carefully, the sort of patient you have to deal with, with a view to the question of prognosis.

Now get the patient to uncover the whole front of the chest, and place her in such a position that you can examine the breast and axilla with ease. The most satisfactory plan is for her to lie on her back on a bed or couch. You should then stand by the side opposite to that on which the disease is situated, for by so doing, while you will be able to examine the breast equally well with both hands, you will find that one hand will be able to examine most conveniently the axilla. Thus with the disease on the left side, stand on the right and use your right hand to examine the axilla. If the disease is on the right side, stand on the left side and use your left hand for that purpose. While it is not necessary in every case for the patient to be lying down you will find that in some few, when you are doubtful whether the sense of elasticity you have made out is due to fluid in a tense cyst or to a new growth, you can only make a satisfactory examination when she is in that position, and the breast rests on the chest wall. If the patient is not lying down you can let her sit in a chair and stand before her using your right hand for the left axilla and your left for the right; or if you elect to stand behind her, use the same hand as the side on which the disease is situated.

Before touching the breast, examine carefully by inspection, for much may be learnt by this alone. Indeed, in some few

cases, when from some unaccountable reason a woman has allowed a growth to develop to a great size before seeking advice, any further examination is really only to confirm what the eye has already seen. Such cases are fortunately rare now, and it is to be hoped they will become more so. Note the size of the breast, and the exact position and size of any swelling that may be present. The skin over a tumour may be normal in appearance if not involved or unduly stretched by it, or it may be red and thin, as in some cases of rapidly growing sarcoma, or red and infiltrated, desquamating or ulcerated, as in carcinoma. There may be nodules of growth visible around the main mass, as in some cases of extreme malignancy. The skin may be dimpled or puckered from traction on the suspensory ligaments. If the skin is completely destroyed, its destruction may be effected in one of two ways; either by the growth gradually spreading into it and then destroying it by ulceration, as in cases of carcinoma, or by its being stretched over a rapidly growing tumour, so that it becomes thinned and finally destroyed rather by a process of atrophy than by one of ulceration. In such cases the growth may then protrude through the skin as a hernia, and the margin of the hole through which it protrudes is thin and easily seen, the appearance being altogether different to that seen in cases of ulceration following infiltration of the skin itself by the growth.

The nipple has claimed much attention from the fact that in many cases of carcinoma it becomes retracted. But inasmuch as it is often retracted when there is no disease of the breast at all, it loses some of its value as a point in diagnosis. The nipple may be naturally small and apparently retracted, or its retraction may be due to a previous inflammation of the breast. When there is retraction as the result of carcinoma, it is caused by the growth having involved the ducts, and as it contracts, traction is made on the nipple; hence this is often more retracted on the side nearest the growth. Notice whether there is any discharge from the nipple, and if so, what are its characteristics. A

chronic eczematous condition of the nipple and its areola is sometimes present, and is a clinical fact of much importance, as it is frequently associated with cancer. It is known as Paget's disease of the nipple, and it is characterised by the skin being very red, with considerable thickening of its substance, and the margin of the patch is well defined.

Having now inspected the seat of the disease, proceed to examine it with the hand. In doing so, it is necessary at first to use the flat hand, and not to feel the breast with the tips of the fingers as is often done. With the flat hand it is possible to detect the slightest thickening or localised swelling, and to differentiate it from surrounding breast tissue, whereas by using the finger tips a small tumour may be missed, or the part of the breast between the fingers may feel sufficiently hard and defined to suggest its being thickened by inflammation or growth.

The points to make out by palpation, using first the flat hand and then both hands, are—

1. The exact position of the tumour.
2. The nature of its surface; whether smooth or irregular, hard or soft.
3. Its consistence; whether it is entirely fluid or solid, or whether cysts are present as well as solid material. There is often much difficulty in distinguishing between fluid in a tense cyst and some rapidly growing tumours. Note whether the centre of the swelling feels more elastic than the periphery; this is in favour of its being fluid, for in growths the centre usually feels firmer than the margin. It is in such cases that the patient must be placed on her back, so that the breast is supported on the chest wall. If still in doubt, a hypodermic needle may be used and the swelling tapped; but remember that even if fluid is drawn off that is not pus, you may still be in doubt as to whether there is any growth around it. It is a good routine practice to make an incision into all growths at the time of operation where there is any possibility of doubt as to their nature. Such caution may prevent you from removing a breast unnecessarily.

4. Its margin ; whether clearly defined as is the case with an adenoma, or whether this passes imperceptibly into the neighbouring breast tissue as in inflammatory conditions and in rapidly growing carcinomas, or whether processes can be felt radiating from its centre as are occasionally felt in some cases of hard carcinoma.

5. Its relation to the breast, the nipple, the skin, and the pectoral muscle. If the breast is grasped with one hand and the tumour with the other, it will be possible to move the latter to some extent while the former is fixed, if it is encapsuled within the breast, as is the case with an adenoma. This independent movement does not exist with carcinoma, as this growth incorporates itself firmly with the rest of the breast. If the tumour involves or is attached to the ducts leading from the nipple, traction on it will produce some retraction of the nipple. It may be noticed on attempting to move the skin over the surface of the swelling or to pinch it up, that there is an evident attachment between this and the swelling. This attachment may be due either to traction on the suspensory ligaments when carcinoma is present, or to a patch of inflammation spreading slowly towards the surface ; in the latter case, there may possibly be some slight redness, oedema, or increase of temperature, though if the inflammation is very chronic these signs will all be absent.

A normal breast can be moved freely over the pectoral muscle when the arm is raised and the muscle put on the stretch, the movement being free either across its fibres or in the direction of their length. This, however, is not the case if a growth is gradually infiltrating the deep part of the gland and is involving the fascia over the muscle or the muscle itself. On examining for this movement, the breast is found to rock on the point of fixation if this is only slight, or even to be quite fixed if the infiltration is more extensive. The organ cannot be moved over the surface of the muscle as in health. You may take it that the actual amount of infiltration is always greater than it appears to be.

6. The examination of the axilla must now be made, and especially under the pectoral muscles and by the vessels. It is well to remember that you can only obtain positive information if you feel enlargement of the glands. If the axilla is carefully examined by a competent person, he can report either that he does or does not feel enlarged glands; but if he does not feel any he cannot say that none are present, for with every care small glands deeply placed, or even larger ones in a fat woman, may escape detection. It is, of course, quite possible to overlook considerable masses of glands, unless you make the examination with care and precision. The patient's arm should be close to her side, and the hand that most easily passes into the axilla must be used for its exploration. Some years ago, when the operation for removal of a breast was conducted on less radical lines than at present, the axilla would probably not have been opened if the surgeon believed the glands to be healthy, so that it was considered important to ascertain beforehand whether there was any enlargement or not. At the present time, however, you examine the axilla for another purpose, not to make out whether it should be opened or not, but to give you some idea of the extent of the involvement of the glands, and whether their position and size are such as to contra-indicate any operative interference. The axilla is always opened and cleared out now when the breast is removed, and you will invariably find that the glandular enlargement is greater than you have been able to detect beforehand.

You should also examine the supra-clavicle glands. Enlargement of these adds very much to the gravity of the case, as it means that the cancerous material reaches in an unbroken line from the tumour to the neck, and that if any attempt is made to remove the disease the whole of this line must be attacked by a most formidable operation.

In advanced cases of carcinoma, where there is pressure on the veins and lymphatics, œdema of the hand and arm is present, and the case is not suited for operation. In all cases a search

should be made for secondary deposits in the internal organs, the bones and the skin, and any so-called "neuralgic" or "rheumatic" pains in the chest, or about the bones, should arouse suspicion.

There is no doubt that in the early stages of this disease the amount of pain varies very considerably. In some cases the tumour is found quite accidentally, and there has not been any pain to direct the patient's attention to the part. Indeed, some tumours may attain a considerable size before any pain is felt. The absence of pain is really an unfortunate occurrence, for not unfrequently the patient will hesitate to seek advice for a swelling that is not associated with pain, and hence valuable time is lost. When pain is present, it varies in amount and extent. From an occasional sharp pain in the breast, or radiating round the chest, or down the arm, it may be of such severity as to cause great distress.

APPENDICITIS: ITS PROGNOSIS AND TREATMENT,*

WITH AN ANALYSIS OF 91 CASES.

BY GEORGE HEATON, M.A., M.B., F.R.C.S.

I MAKE no excuse for choosing a subject which to some present may perhaps seem to have been worn almost threadbare. I do not do so for several reasons. For whatever may be the cause of the increasing frequency of the disease, few I fancy will deny that this increased frequency does exist; and that it spares neither doctor nor patient we have unfortunately had abundant evidence during the past year, though we can fortunately congratulate our medical brethren on their escape from its fatal maw.

Then again, the disease itself assumes such different clinical forms and varies so greatly in its severity, while our modes of combating it differ so widely that the subject forms an excellent one for discussion.

Personally, too, the disease has for me a somewhat melancholy interest, as during the last few years I have lost no less than four close personal friends in its clutches.

The remarks I intend to make on the treatment and prognosis of this disease are based upon notes of some 91 cases of appendicitis I have had under my own immediate care during the last few years. These cases have been of all grades of severity, and include 21 cases where no active surgical treatment was necessary. I shall not attempt to inflict upon you clinical details of any of the cases, but shall perhaps allude to some peculiar clinical features of some few of the cases.

For purposes of Prognosis and of Treatment, cases of appendicitis may from a clinical point of view be roughly divided into four classes.

1. Acute simple appendicitis, where the inflammation does not go on to the formation of pus, and where complete resolution as a rule follows.

* Read before a meeting of the Midland Medical Society on March 5th, 1902.

2. Acute appendicitis with the formation of a localised peritonitic abscess, or an abscess in the cellular tissues behind the cæcum.

3. Acute fulminating appendicitis with general septic peritonitis.

4. Chronic and relapsing appendicitis.

The treatment of each one of these varieties is now laid down on fairly definite lines, and if only we could be sure which variety were present in any given case, the main lines of our treatment would be clear. But unfortunately it is a disease which is apt to assume such very different clinical aspects, that it is extremely difficult, if not impossible, sometimes to decide which variety we are dealing with.

We will commence with the treatment of a case of Acute Simple Appendicitis. Such cases fortunately constitute the great majority of the disease in question, and, as a rule, get quite well under a purely medical or expectant treatment.

Absolute rest on the back in bed is the first essential, and to obtain this it is necessary to have good nursing. In fact, the issue of a case of simple appendicitis depends in large measure, as in a case of enteric fever, on the quality of the patient's nursing. He should remain in bed until all pain and tenderness have entirely disappeared, and no swelling or thickening can be detected in the region of the appendix. Many a relapse owes its occurrence to insufficient rest during convalescence, and for this reason such relapses are a good deal more frequent amongst hospital than amongst private patients.

A careful watch is to be kept upon the pulse and temperature, and these should be taken regularly night and morning. A rise in the pulse rate, or return of fever after the first subsidence, is usually the first warning of the formation of pus; and, no matter how well the patient may express himself as feeling, a rapid and rising pulse rate should always make us suspicious that all is not as it should be.

As soon as vomiting, which as a rule does not continue more than one or two days, has ceased, the patient may have fluid spoon food, and should be kept on a purely liquid diet until

convalescence is established. Milk is apt to cause distension and increase the constipation. It should be peptonised before given, and diluted with barley water or soda water. Beef tea, mutton broth, meat jellies, and the like, form an agreeable change.

Drugs.—It is of the greatest importance at the commencement of an attack to get a free evacuation of the bowels. Constipation is the rule, and it is often most obstinate. Maylard* and D'Arcy Power† recommend hourly doses of magnesium sulphate until the bowels are moved. There is no doubt that such treatment does cut short a mild attack of appendicitis, and is an excellent mode of securing our end in such an attack. But we can seldom tell at the very commencement of the illness whether it be not one of perforative or gangrenous appendicitis, and I know of no mode of treatment more calculated to expedite an impending perforation than a brisk saline purge given by the mouth. For this reason it is, in my opinion, wiser to empty the bowels by enemata. A large simple enema should be given, and if this is not effective it should be followed by one of turpentine, castor oil, and olive oil. The improvement which follows a free action of the bowels is often little less than marvellous. Opium, marking as it does the patient's symptoms, and paralyzing the peristalsis of the intestine, should not be given as a routine. To withhold it entirely may be best of all; but it is often a counsel of perfection. A hypodermic injection of morphia is frequently necessary at the commencement of an attack to relieve the patient's agony, but should not be repeated. The pain will usually subside under local applications, unless pus is actually being formed.

No drug seems to have any influence on this course of the disease. Salol given in 5 or 10 grain doses every six or eight hours acts as a mild intestinal antiseptic, and assists in relieving the abdominal distension. When given after a feculent abscess has been opened, it certainly quickly renders the pus less foul.

The question of stimulants must be judged of separately for

* *Glasgow Med. Jour.*, March, 1899. † *Brit. Med. Jour.*, Nov., 1899.

each patient. In the milder cases none is necessary: in the fulminating septic cases too much can scarcely be given.

As regards local applications, both warmth and cold have their advocates. Cold, if used, must be applied either in the form of an icebag, or by means of an ice coil. In either case the weight is apt to be complained of by the patient, and the method of application is cumbersome and somewhat difficult: but it is frequently grateful to the patient. My own chief objection to cold is on account of its depressant action.

Most hot applications are usually well borne. Hot fomentations frequently changed, with occasionally a little opium sprinkled on the surface are usually most comforting. They ease the pain by relaxing the tissues, and at the same time are useful for their cleansing action on the skin.

When the pain and tenderness are very acute in the early stage, and are causing much distress, the application of two or three leeches will often act as a charm, and seldom fail to give relief. The objection raised against them is that if afterwards an operation becomes necessary, the skin is infected by the leechbite: but I have never found this a source of danger in my own cases, and use them frequently.

To avoid a recurrence of such attacks; absolute regularity in the action of the bowels is of primary importance. Some mild laxative, such as cascara sagrada must be habitually taken until this regularity has been assured. Next in importance to my mind comes the thorough mastication of all food. Can it be that the hurried and irregular meals which medical men are so often forced to take, have something to do with their vulnerability to the complaint?

A very large number of patients after such an attack of appendicitis have never any more trouble. It is difficult to ascertain the exact percentage of cases which afterwards suffer from relapses. The majority of the cases admitted into the surgical wards of our hospitals have had previous attacks. But it is not fair to judge solely from these cases which are usually suppurative ones. Relapses probably occur in about 30 or 35 per cent. of all cases. Unfortunately, when they do

occur, the nature and severity of a previous attack will serve as no guide in determining the probable severity or mildness of the relapse.

A patient who has had a second attack should be advised to submit to an operation for the removal of the diseased organ. This can be done in a quiescent interval with very small risk to life.

We now pass on to the Second class of cases,—those in which suppuration is impending, or has taken place; and here the difficulty of the subject becomes apparent. For while we shall best consult our patient's interests by withholding the knife,—at any rate until a quiescent interval—in all cases of simple or non-suppurative appendicitis, it is our bounden duty as soon as we feel sure that pus has actually been found, no matter how small its amount, to lose no time before we let it out.

In some cases the appendix—usually the seat of old standing disease—suddenly gives way, or the inflammation by its very intensity causes actual gangrene of the organ, and a most virulent general septic peritonitis exists practically from the commencement of the attack. These cases, which may be termed the fulminating variety of appendicitis, though awful in their rapidity and extreme fatality are fortunately rare. As a rule, before actual general septic peritonitis supervenes there has been a localised peri-appendicular abscess present for some time previously, and it is the bursting of this abscess which afterwards causes the fatal mischief.

There is no one symptom which will infallibly guide us in detecting the formation of pus around the appendix. The temperature may remain normal, the pain and tenderness may have abated, the pulse even be of normal frequency, and yet a fair sized abscess may have formed. But as a rule, a careful constant watch on the patient's condition and symptoms will enable us to form an accurate opinion on the subject. In cases which are undergoing resolution, the general constitutional symptoms—the fever, the pulse frequency, the pain, the tenderness and the distension—will all be undergoing improvement after the end of forty-eight hours. The patient should

begin to sleep better, his appetite begin to return, his tenderness be less marked though more localised, and his peculiar pinched facial aspect gradually to disappear.

The temperature chart often gives us the earliest warning. It may remain continuously high instead of gradually beginning to fall towards the normal towards the close of the first week. In other cases after a fall towards normal it begins to rise again. This is in itself a very suggestive sign and should make us suspicious that pus is forming.

The changed facial aspect of the patient is again very suggestive to the careful watcher. He has a pinched anxious expression with dark areolæ under his eyes. The pinched careworn expression is no doubt in large measure due to his pain and want of sleep.

Pain and tenderness which were subsiding, generally become more pronounced again. The pain prevents sleeps, and sometimes causes great restlessness. The tenderness re-appears and may be even more acute than it was at the commencement of the attack. When pus is forming in the true pelvis there is often frequency of micturition and pain during the act. Enemata for the relief of constipation at the same time become much more painful during their administration.

The pulse is accelerated in the majority of cases when pus is actually forming, or has formed. It generally ranges between 80 and 90, but may run up to 120 or 130 in severe cases. On the other hand, a pulse of 75 or 70 is no certain proof that pus is not present, and I have had several cases under my care illustrating this.

The appetite usually fails, and the tongue instead of cleaning has a tendency to become dry and brown. Vomiting occasionally sets in again.

A careful examination of the abdomen shows that the localised inflammation in the right iliac fossa is extending. Respiration becomes somewhat quicker and less abdominal, the lower half of the abdomen remaining almost still. The abdomen itself becomes fuller and more distended, and the swelling in the right

iliac fossa becomes daily larger. Examination of the rectum should never be omitted. In a large number of cases a fulness or definite tumour can thus be felt, and this in cases of suppuration grows daily larger. When the appendix lies in the pelvis, and the abscess is almost wholly pelvic, the rectal tumour may be the only local evidence of pus until the abscess has become so large as to rise up out of the pelvis.

The bowels in some cases of suppuration become loose, and constipation gives place to diarrhœa. I have had several cases where profuse diarrhœa persisted almost from the commencement, until pus had been let out, and then spontaneously ceased.

Another valuable clinical guide, and one which will seldom fail us, is a repeated daily examination of the blood and estimation of the number of leucocytes present. It is a method of investigation which is by no means difficult or intricate. There is no necessity to take the apparatus or microscope to the patient's bedside, but, the pipette having been filled, and the dilution made at one's ordinary visit, the count may be made at home at one's leisure. It is of great value in all cases of suspected deeply-seated suppuration, and is a method which only needs to be more widely known to be appreciated at its full value.

When in the absence of any complicating chest trouble, such as pneumonia, the leucocyte count is found to be abnormally high, reaching, for instance, 18,000 or 20,000, and particularly if this number increases day by day, pus will invariably be found if operation be undertaken. And conversely, if the leucocyte count be day by day diminishing, even though the patient's general symptoms remain acute, we may with comparative safety wait in hope that the inflammation may undergo resolution.

Some months ago I published a short paper on this subject in the *Medical Magazine**; the subjoined illustrative cases are taken from that paper:—

Case 1. *Appendicitis; marked Leucocytosis; large Pericæcal Abscess.*—A. L., a boy, æt. 8; first attack; duration of illness, eight days; ill-defined tumour in region of appendix; pulse, 108; temperature, 101. Next day, condition the same. Third day,

* *Medical Magazine*, Vol. X. No. 8.

not so well. Leucocyte count, 37,980 per c.mm. Operation ; large collection of pus found behind cæcum and colon. Un-eventful recovery.

Case 2. *Appendicitis with formation of Localised Abscess. Rising Leucocytosis.*—G. C., æt. 14 ; admitted on third day of illness. Leucocyte count falling after admission with abatement of symptoms ; then rising leucocyte count on 7th day of illness. Abscess opened on 8th day, followed by gradual fall in the leucocyte count until convalescence.

Aug. 1st. Leucocyte count, 21,840.

„ 4th. „ „ 17,600.

„ 6th. „ „ 21,040.

„ 7th. „ „ 21,560. Operation, pus evacuated.

Aug. 13th. „ „ 10,240.

„ 21st. „ „ 6,560.

Case 3. *Appendicitis with complicating Suppurative Parotitis.*—J. C., æt. 26 ; admitted with localised suppuration around appendix. Abscess opened and drained on day of admission. Bacillus coli found in the pus ; no streptococci, or staphylococci. On July 19th, 20th, and 21st, much improved ; temperature, normal ; pulse, 95-100. July 23rd, leucocyte count 24,960. July 24th, leucocyte count 28,400 ; some œdema present in parotid regions. July 25th, parotids explored, but no pus found. Blood drawn gave a pure cultivation of staphylococci. July 26th, abscess opened in both parotid regions. Leucocyte count rapidly fell to 12,000.

Case 4. *Appendicitis with gradually increasing Leucocytosis. Large localised collection of pus found. Recovery.*—M. H., a single girl, æt. 16 ; admitted December 13th, with obscure abdominal pain ; 5th day of illness. December 13th, leucocyte count, 16,240 ; temperature, 101'4.

Dec. 14th Leucocyte count, 23,360, Temp. 100.

„ 15th. „ „ 21,380. No tumour to be felt.

„ 16th. „ „ 22,500.

Dec. 18th. Leucocyte count, 27,040.

„ 20th. „ „ 33,125. Transferred to my care. Abdominal section performed, and large collection of pus found.

Dec. 27th. Leucocyte count, 12,050. Gradual convalescence.

There can be no question as to the line of treatment, when once the actual presence of pus has been diagnosed or even strongly suspected. The various natural terminations of an abscess in connection with the appendix are all fraught with such risks to life that no delay is justifiable.

The abscess must be opened and drained. The incision is best made over the most prominent part of the local swelling if one exist, and if the abscess cavity have come in contact with, and become adherent to the anterior abdominal wall, the operation is one of simplicity. When the abscess lies at the back of the abdominal cavity or in the pelvis, every care must be taken before opening it to protect the uninfected peritoneum: and this is best done by protecting the healthy coils of intestine with absorbent sponges.

When a localised abscess has been opened in this way, the question always arises—shall a search be made for the diseased appendix, and the operation be made a complete one by its removal?

If it be removed the *fons et origo mali* is undoubtedly removed, and the operation is in a sense a more complete one than if it be left behind. But on the other hand, I feel confident that if any prolonged search be made for the appendix, recent limiting adhesions are almost certain to be torn through and there is a great risk of the suppurative process becoming generalised. I am myself strongly of opinion that no search should be made in those cases of localised abscess for the appendix. If the organ on opening the abscess is seen or plainly felt, a ligature is placed round its base, and it is excised, but no search should be made for it. The acute suppuration in it and around it, in the large majority of cases, causes its complete obliteration. In a few exceptional cases the patient may have some months afterwards

a second small collection of pus under the seat of the first operation. I myself have had one such case out of 24 localised abscesses which I have opened and drained; but in the vast majority of cases the patient is permanently cured.

The abscess cavity is allowed to empty itself, and if it is a very large one and contains very offensive pus it may be irrigated with extreme gentleness. It is then drained and allowed to granulate up from the bottom. This it usually does in some five or six weeks, though in some few cases a sinus may remain for a few months.

When the diseased appendix is situated to the outer side of the cæcum or behind it, pus when formed in connection with it has a great tendency to track up behind the colon towards the liver, and I have opened such an abscess in the right hypochondrium. When the main swelling is to the outer side of the cæcum and colon, it is often advisable to make the opening above the iliac crest in the loin, and we can thus sometimes tap the cavity without opening the general peritoneal cavity.

In the same way when the abscess is entirely pelvic it may be opened through the rectum or through the vagina (in women). These openings have the advantage of being dependent. But in the case of the rectum we are apt to leave the patient with a troublesome internal fistula.

In the Fulminating Class of Appendicitis, where, without warning, sudden gangrene of the appendix takes place, or a sudden perforation of the organ occurs before any limiting adhesions have had time to form, the case is a desperate one from the very commencement; unless operation be undertaken within a few hours of the perforation, the case is hopeless.

When on opening the abdomen the whole peritoneal cavity is found in a state of acute inflammation, and a thin foul-smelling fluid is found filling the pelvis, bathing all the coils of intestine, and even the liver, stomach and spleen, we shall seldom succeed in saving our patient's life.

These cases are fortunately rare, forming perhaps not more than 2 or 3 per cent of the total number of cases..

On the prompt recognition of the condition of things hangs the patient's life. Every minute is of value. There can be no waiting to see if the symptoms abate. The case resembles in its gravity one of sudden perforation of the stomach, though the fluid which is poured out into the general peritoneal cavity is, if possible, even still more irritating. The patient may have previously had several slight warnings in the shape of pain in the appendical region. If the previous attacks of appendicitis have been severe, adhesions are as a rule left behind, and these, if perforation occur in a future attack, usually limit its spread.

The symptoms in a typical case are all alarming in their severity. All the general constitutional symptoms point to an extremely severe attack, while the local symptoms are often ill-marked. The temperature may rise as high as 103° or 104° , and may remain continuously high till the end, or may drop to normal or subnormal, and remain so. The pulse is more rapid than in an ordinary attack. Its frequency increases daily, and towards the close of the case is almost uncountable. The vomiting is frequent, the tongue becomes dry and brown, sordes collect about the lips and gums, and delirium is often present at night.

While these constitutional symptoms all point to a very severe infection, the local ones may be very ill marked. The abdomen is generally tender and painful, but no definite tumour can be made out. Distension, due to paresis of the intestinal walls, is usually an early symptom, and tends to increase. The bowels as a rule are constipated, but in some cases a septic diarrhoea sets in. The patient is, in fact, being rapidly poisoned by toxins absorbed from a general septic peritonitis.

Attention to the number of leucocytes in the blood of such a patient will frequently help us. A high degree of leucocytosis with a rapid and increasing pulse rate is a strong indication for immediate operation.

Unfortunately the prognosis is very bad, even when the operation is undertaken early. On opening the abdomen in such a case, the appendix—perforated, and in a state of acute

inflammation, or even gangrenous—is as a rule easily found, and should be removed after ligature of the base, as there are no limiting adhesions.

The question of cleansing the abdominal cavity in these cases is a difficult one, as the patient's condition is frequently so bad as to preclude any prolonged exposure, and manipulation of the abdominal contents. A second opening should be made low down in the linea alba, and the abdominal cavity thoroughly flushed with large quantities of normal salt solution. The fluid must be made to reach all parts of the abdominal cavity, special care being taken to cleanse the hepatic and renal regions, and to thoroughly irrigate the true pelvis. The abdomen then is rapidly sponged dry, and several drainage tubes left in, one of which passes to the bottom of Douglas' pouch.

It is very difficult to form an estimate of the true mortality of all cases of appendicitis. The majority of one's cases are of course culled from one's hospital experience, and statistics founded solely on them would show a considerably higher mortality than one founded on private cases. Many of the less severe cases amongst the poorer class of patients recover without seeking medical aid at all, and when medical aid is called in, if the case undergoes resolution, one hears no more of it. It is only when pus has actually formed, or when sudden perforation has taken place, that the patient is admitted, to the surgical side, at any rate, of one of our hospitals.

Statistics drawn from my own cases, 91 in number, illustrate this point. The majority of my non-suppurative cases have been seen in consultation outside the hospital, while among my cases admitted to hospital, no less than 67 per cent. had pus present when admitted, either as a localised abscess or as general peritonitis. Yet the percentage of cases of appendicitis which go on to suppuration, in all probability does not exceed 25 or 30 per cent.

I append a list of all my cases of Appendicitis treated up to the present time, arranged in five distinct groups.

UNDER TREATMENT:

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CLASS II. *Cases with Localised Peritonitic Abscess.*

No.	Date.	Sex.	Age.	REMARKS.	Result
1	July, 1892	M.		Abscess in true pelvis. Appendix not seen.	C.
2	May 4, 1894	M.	12	Small faecal fistula remained for three months; small concretion then discharged.	C.
3	Jan. 28, 1898	M.	22	Appendix not removed.	C.
4	April 27, 1898	F.	20	Very large abscess cavity. Flushed at operation. Appendix discharged entire as a slough.	C.
5	Oct. 4, 1898	M.	12	Abscess cavity tracked behind colon. Faecal concretion in abscess cavity.	C.
6	Oct. 29, 1898	M.	16	Faecal concretion in abscess cavity. Appendix removed.	C.
7	Dec. 8, 1898	M.	17	Died three weeks later from intestinal obstruction due to extensive adhesions.	D.
8	Aug. 17, 1899	M.	18	Appendix removed. Convalescence very slow.	C.
9	Aug. 24, 1899	M.	32	Appendix came away during convalescence as a slough.	C.
10	Dec. 13, 1899	M.	8½	Large abscess cavity irrigated.	C.
11	Nov. 17, 1899	F.	6	Six previous attacks.	C.
12	Dec. 7, 1899	M.	16	Very large pelvic abscess. Suppurative parotitis during convalescence.	C.
13	April 1, 1900	M.	22	Sinus remained for six months, then it closed soundly healed.	C.
14	Nov. 14, 1900	M.	18	Pneumonia of right lung also present.	C.
15	Dec. 20, 1900	F.	16	An ear of corn discharged from abscess cavity.	C.
16	Feb. 27, 1901	F.	35	Abscess on outer side of cæcum. Small secondary abscess formed in 1901.	C.
17	Feb. —, 1901	F.		Abscess cavity on inner side of cæcum.	C.
18	April 3, 1901	F.	25	Third attack. Pus in the true pelvis.	C.
19	April 27, 1901	M.	23	Progressed well till June; then died of general peritonitis.	D.
20	May 22, 1901	F.	45	Second attack. Peritonitis rapidly extending.	C.
21	June 18, 1901	F.	37		C.
22	July 12, 1901	M.	11½		C.
23	Aug. 15, 1901	M.	13	Very large abscess. Faecal concretion found in the abscess cavity.	C.
24	Nov. 6, 1901	M.		"Many" previous attacks. Faecal fistula for three weeks.	C.
25	Jan. 3, 1902.	M.			C.

CLASS III. Cases with Abscess in Cellular tissue behind Cecum and Colon.

No.	Date.	Sex.	Age.	REMARKS.	Result.
1	May 13, 1898	M.	16	Abscess behind colon. Opened from front. Appendix removed.	C.
2	May, 1899	F.	17	Appendix removed.	C.
3	Oct. 19, 1900	M.		Abscess opened from loin. Sinus remained. Appendix subsequently removed for fecal fistula.	C.
4	Feb. 4, 1901	M.	19	Large abscess cavity opened and drained from right loin.	C.

CLASS IV. Cases with General Septic Peritonitis.

No.	Date.	Sex.	Age.	REMARKS.	Result.
1	Sept. 3, 1893	M.	19	Abdomen flushed and drained. Death on 5th day.	D.
2	Nov., 1893	F.	16	Appendix removed. Abdomen flushed and drained. Died of septic pneumonia of right lung, 5th day.	D.
3	April 27, 1895	M.	18	Appendix removed. Abdomen flushed and drained. Death on 8th day from septicæmia.	D.
4	Oct. 15, 1896	M.	7	Patient moribund. Appendix gangrenous. Septic pleuro-pneumonia.	D.
5	Jan. 29, 1897	M.	8	Abdomen flushed and drained. Death 12 hours after.	D.
6	March 31, 1897	M.	16	Gangrenous appendix removed. Abdomen flushed and drained. Apparently moribund for 5 days afterwards.	C.
7	June 19, 1898	M.	26	Several pints of fluid in abdominal cavity.	D.
8	Dec., 1898	F.	9	Gangrenous appendix removed. Abdomen sponged clean and drained.	C.
9	May 24, 1899	F.	10	Abdomen flushed and drained. Death 36 hours afterwards.	D.
10	July 18, 1899	M.	26	Double suppurative parotitis during convalescence.	C.
11	August 13, 1899	M.	29	Abdomen flushed and counter openings made. Appendix removed.	D.
12	Oct. 12, 1900	M.	23	Abdomen flushed and counter openings made. Death 48 hours afterwards.	D.
13	May 21, 1901	M.	13	Death from septic pleuro-pneumonia.	D.
14	Dec., 1901	M.	13	Perforated appendix removed. Abdomen flushed. Death 4 days afterwards.	D.

CLASS V. Cases of Relapsing Appendicitis.

No.	Date.	Sex.	Age.	REMARKS.	Result.
1	Mar. 4, 1896	M.	18	Four previous attacks. Appendix kinked and fixed by adhesions. Removed.	C.
2	Oct. 16, 1896	F.	28	Many previous attacks. Uterine appendages previously removed. Appendix much thickened.	C.
3	Dec. 8, 1896	M.	8½	Seven previous attacks. Appendix fixed to anterior abdominal wall, and distended at its apex	C.
4	Mar. 29, 1897	M.	33	Continuous invalidism for 15 months previously. Appendix doubled up and adherent to cæcum.	C.
5	May 8, 1897	M.	22	Two previous attacks.	C.
6	May 15, 1897	F.	21	Attacks frequent for 6 months. Small abscess around appendix, which set up general peritonitis.	C.
7	May 29, 1897	M.	46	Four previous attacks. Appendix distended with muco-pus.	D.
8	Nov. 2, 1897	M.	10	Appendix acutely kinked, extremely bulbous.	C.
9	April 19, 1898	M.	11	Appendix matted to intestines and abdominal wall.	C.
10	May 13, 1898	M.	16	Small abscess around appendix; gauze drain afterwards.	C.
11	May 20, 1898	M.	38	Six previous attacks. Appendix coiled upon itself.	C.
12	May 20, 1898	M.	25	Many previous attacks. Appendix in true pelvis.	C.
13	May 24, 1899	M.	18	Four previous attacks. Appendix sessile in cellular tissue behind colon.	C.
14	Aug. 26, 1899	M.	15	Appendix in true pelvis. Torn through during removal.	C.
15	Mar. 10, 1900	M.	21	Three previous attacks. Small ulcerated opening also found leading into cæcum.	C.
16	May 11, 1900	M.	32	Three previous attacks. Appendix much thickened.	C.
17	Dec. 14, 1900	M.	23	Appendix measured 7 inches.	C.
18	Jan. 11, 1901	M.	23	Small abscess present. Much omentum also removed. Gauze drain.	C.
19	April 10, 1901	M.	8	Appendix adherent in pelvis. Part of organ left behind.	C.
20	July 5, 1901	F.	37	Four previous attacks.	C.
21	July 19, 1901	M.	13	Fæcal fistula remaining after abscess had been opened. Appendix removed.	C.
22	Aug. 9, 1901	M.	26	Tight stricture of lumen with dilatation of distal end of appendix.	C.
23	Sep. 6, 1901	M.	16	Two previous attacks. Appendix 7 inches long.	C.
24	Dec. 17, 1901	F.		Invalidism for 4 months. Lumen of appendix entirely destroyed.	C.
25	Jan. 24, 1902	M.		Three previous attacks. Appendix acutely kinked by adhesions.	C.
26	Feb. 8, 1902	M.		Several previous attacks.	C.
27	Feb. 14, 1902	F.			C.

RECTAL CARCINOMA, AND THE PROLONGATION OF LIFE BY COLOTOMY.*

BY F. V. MILWARD, M.B., B.C. CANTAB., F.R.C.S., ENG.

Mr. President and Gentlemen,

The question of cancer of the rectum has occupied the attention of many writers, by whom the subject has been dealt with very fully. It would be almost impossible for me to say anything new about the disease in this paper, and I am therefore not attempting to do so. One object that I have had in view, however, has been to try and follow up those cases of rectal carcinoma, which came under my personal notice, while I occupied a three years' appointment at the General Hospital (Birmingham). The endeavour to find out what eventually became of them, has, I fear, not been attended with the success that I could have wished for. Such as it is, I will speak of it later.

At first sight the rectum is apt to strike the observer as one of the least interesting parts of the anatomy, both from a sentimental, an artistic, and a surgical point of view. And yet I think it can be safely said that the tissues comprised by it, and the anus, and adjacent parts, are as often diseased as almost any other portion of the human frame.

Affecting this area there are many lesions, such as hæmorrhoids, fissures, rectal abscesses, fistulas, and the like, which, while causing the greatest inconvenience, pain, and distress, are by no means dangerous to life. Be the case one of fistula, what greater worry can a man have? Be it one of pruritus ani, what more maddening complaint can he endure? Be it a colicure, what more intense pain can he suffer, in proportion to

I small a lesion? And be it a case of paralysis of the sphincter, beneficosition is unenviable alike for the patient, and his friends. the gusides this, only a minimum of friendly sympathy must be

hæmo Paper read before the Birmingham and Midland Branch of the
reason Medical Association

expected by the victim, on account of the peculiar nature and position of the part in question.

All these, however, are trivial complaints, and sink into insignificance when compared with carcinoma, a disease which seizes mankind practically at any age when affecting the rectum, and which, in the vast majority of cases, terminates his existence after the greatest suffering in from one to three years.

Primary carcinoma of the rectum is in all cases a growth of the adenoid type, which commences in the epithelial cells of the mucous membrane. A tumour is produced whose histological structure is a bad imitation of the rectal mucous glands. The growth is usually situated two to four inches from the anus, and having once commenced its existence quickly assumes one of three forms—either a cauliflower mass, an excavated ulcer, or a plaque extending under the mucous membrane, which for a time may be felt to move freely over it.

As the new growth increases, a considerable amount of irritation is set up in the surrounding tissues; and at the base of the diseased mucous membrane one can see microscopically, that the infiltration of leucocytes is taking place. This is followed by the production of young connective tissue, and in due course by the contraction of the base of the growth. The contracting submucous tissue tends to push the fungating, or ulcerating tumour into the lumen of the bowel, and the growth itself as it progresses shows a great tendency to encircle the bowel wall. Thus a stricture is produced, the obstruction being aided in many cases by the exuberant mass blocking up the lumen.

The production of new growth, and its attendant contraction, are prominent features in most types of carcinoma. And a third factor which has a very important influence on the clinical course of cases, and which occurs somewhat later, is ulceration. I wish to point out here, that ulceration which is of such significance in cancers as a rule, may have one compensating advantage when the rectum is the part diseased, for as the traction increases, obstruction may be averted, and the part preserved by this means.

Sep. 5, 1902
Dec. 17, 1902
Jan. 24, 1903
Feb. 8, 1903
Feb. 14, 1903
27
27
27
27

These three factors then, viz., the production of new growth, contraction, and ulceration, are responsible for the main macroscopical and clinical symptoms of rectal carcinoma. Cases, to be sure, will differ vastly in the course that they run, and symptoms change as the disease progresses, but so will these three factors differ in predominance. In one man, the excess of new growth will produce rapidly increasing obstruction, terminating possibly acutely, or by a big hæmorrhage, as the fungating mass, with its thin-walled vessels, is torn through or sloughs away.

In another, the slow contraction produces chronic obstruction, leading to alternating constipation and diarrhœa, with the occasional discharge of blood and mucus.

In a third, where the growth has become ulcerated, a fairly free passage has perhaps been established, and the chief symptoms are pain and a more frequent discharge of blood and mucus. The tenesmus set up in these cases is very distressing. The ulcer produces blood and serum, and the irritated mucous glands in the neighbourhood discharge their contents into the lumen of the gut, already overloaded, perhaps, above the stricture with fæcal contents. The presence of this matter naturally calls into play the expulsive mechanism of the rectum, and the desire to go to stool is only frequently succeeded by the disappointment of failure. But the anal skin will not tolerate for long the irritating discharge, and subsequent cleansing process, which is too often performed with septic and most improper material, and the excoriation which follows, still further aggravates the state of affairs. Added to this there is the soiling of linen, the frequent attendance at the closet, the straining and disappointment that takes place there, the pain, the sense of weakness, the loss of appetite, and the steady decline in health which together contribute to make the patient's existence a wretched one.

I have mentioned that ulceration of the growth may be beneficial from one point of view, that of keeping the lumen of the gut unobstructed, but one must not forget that dangerous hæmorrhage and septic absorption may arise from this very reason. Later, ulceration, either at the site of the stricture, or

the distended part of the gut above may cause fæcal abscess, and fistulæ communicating with the bladder, urethra, vagina, uterus, colon, or small intestine. Finally, it may cause perforation into the peritoneal cavity and fatal peritonitis.

The secondary glandular deposits of the malignant growth are, as a rule, comparatively early in rectal carcinoma, different cases no doubt varying. This secondary deposit is not so early perhaps as in the case of the stomach, but I think I am right in saying that in ileo-cæcal disease it is distinctly later.

Removal of the cancerous cæcum has recently been performed several times in Birmingham most successfully. And if I may venture on an explanation of the comparative difference in time in secondary gland infections in intestinal carcinoma, I think it will be admitted in the first place, that this secondary gland infection is in direct proportion to the malignancy or rapidity of growth of the primary tumour. Also that malignancy is not infrequently in direct proportion to functional activity. I do not say that because an organ is functionally active, that therefore malignant disease affecting it must needs be very malignant. But the fact that the blood supply is increased in active organs, seems to favour the rapid growth of cancer. Hence, I take it, the more rapid growth in pregnant uteri, and lactating breasts, and in the young rather than in the old. And this also may explain the greater malignancy of gastric over rectal carcinomata.

But an additional factor is required to explain why growths of the cæcum are comparatively mild in degree. The cæcum is a far more isolated organ than the rectum. It is attached to the abdominal wall merely by a double fold of peritoneum, and some loose subperitoneal tissue. The rectum, on the other hand, is supported by and intimately attached to the pelvic diaphragm. The latter soon becomes involved in the disease, and helps to bring about the secondary deposit through its own lymphatics.

In addition to lymphatic implication, the secondary deposits of rectal carcinoma are most commonly found in the liver, but I must omit any further discussion of them here.

The diagnosis of a typical malignant ulcer of the rectum should present no difficulties if within reach of the finger. On introducing the finger into the bowel, and feeling the irregular hard raised edge of the ulcer, and possibly the ring-like constriction, or the brittle, bleeding, and fungating mass, the nature of the disease will at once be suspected.

There are, however, a good many conditions which have been mistaken for rectal carcinoma, and a few for which rectal carcinoma has been mistaken. Fibrous strictures should not be difficult to differentiate. They result from trauma, and from simple, infective, or granulomatous ulcers, which have healed, or are slowly healing. The smooth surface and sharp crescentic margin, and the comparatively small proportion of hæmorrhage, pain, and mucous discharge that they cause, and the history of old disease, if obtainable, will help to diagnose the case. Previous history of syphilis is, however, notoriously difficult to obtain in women.

In fibrous stricture, the part of the bowel below the constriction is often the seat of polypi and fistulæ. The same occur in malignant disease, and fistulæ are not infrequent towards the final stages. In comparing these fistulæ with those arising in urethral strictures, it has been shown that the mucous opening, arising as it does in the ulcerated area, is below, or at the site of stricture in the rectum, while in the urethra it is in the distended part above the stricture.

There should be no difficulty about the diagnosis of simple pedunculated polypi, and simple adenomata, occurring as they most often do in young children. At the same time, when the lesion for diagnosis is a growth, the early age at which cancer attacks the rectum should not be lost sight of. A more difficult matter for diagnosis is no doubt the villous tumour, which affects both young and middle-aged adults, but is certainly rarely met with. It grows from a broad pedicle, or is sessile. The frequent hæmorrhages to which it gives rise, and the consequent anæmia may cause grave anxiety and unfounded suspicions of cancer, both to the patient and his medical adviser. The difficulty is

by no means always solved by its free removal, and microscopic examination. Not a few such growths after clinical investigation, and a thorough inquiry, both before and after removal, have been pronounced benign, and nothing malignant has been found about their structure. Yet recurrences have afterwards taken place of a growth undoubtedly cancerous in nature. In an adult of middle age, I should always have grave suspicions of a rectal tumour of a papillomatous or polypoid nature, however innocent were its appearance and symptoms, and would always give a guarded prognosis.

Besides simple strictures, polypi, and villous tumours, the following have also been found to simulate rectal carcinoma: simple, tubercular, dysenteric, and gummatous ulcers; sarcomata; intussusceptions; foreign bodies; scybala in neighbouring coils of intestine; enlarged prostates; displaced uteri; and growths from other pelvic organs or the pelvic wall.

Before leaving the subject of diagnosis, a few words must be said about growths out of reach of the finger. An average finger can explore four inches of the rectum, and rather more, if the patient stands up, and bears down, while in nervous and sensitive patients an anæsthetic will greatly help. By abdominal manipulation, especially in thin subjects, it is possible to feel tumours of the descending colon and sigmoid flexure, but scarcely of the rectum itself. Where there is much distension of the colon with flatus and fæces, manipulation in the left iliac fossa is impossible, and if symptoms are not very urgent, time may be spent in trying to relieve the obstruction by enemata, and suitable diet and rest. Should the distension be so relieved, one is usually able to manipulate any tumour of the colon, with the help of an anæsthetic, and frequently without one. The rectum being nine inches in length, its upper four inches is the only portion of the large intestine in which a tumour cannot be detected *per anum*, or by abdominal manipulation. If while the abdomen is relaxed, no large intestine tumours can be felt, and the other symptoms point to rectal carcinoma, it would be safe to open the gut in the left iliac fossa, *i.e.*, perform a left inguinal colotomy, taking the

precaution to manipulate the first part of the rectum through the wound to substantiate the diagnosis.

But the treatment of obstruction with distension where no growth can be palpated is attended with more difficulty. The older method was to perform lumbar colotomy on either side, according to circumstances. The result was that frequently the peritoneum was opened, the colon sometimes not found, while occasionally the obstruction was not relieved. Lately it has become the practice in these cases, to explore the abdominal cavity by a median incision below the umbilicus, when the bowel can be emptied through a Paul's tube, and the exact relations of the obstruction can be easily ascertained, and dealt with accordingly.

The concluding remarks in this paper will be the recital of a few facts, which I have gained by looking up all the cases of carcinoma which were treated in the General Hospital during 1898, 1899, and 1900, particular regard being paid to rectal carcinoma. During this time, 317 cases of carcinoma, epithelioma, and rodent ulcer were admitted, nearly all of which came under my personal supervision. Taking the four principal parts of the body affected, I find that they were as follows:—The breast, 75 cases, or 23 per cent. of the whole; the rectum, 49 cases, or 15 per cent. of the whole; the mouth (including the lips, tongue, tonsils), 36 cases, or 11 per cent. of the whole; and the uterus, 29 cases, or 9 per cent. of the whole.

Thus, after the breast, the rectum is the second commonest place, and in the previous three years there were 57 cases, as against the 49 I have just quoted. Inoperable cases in the mouth, breast, and uterus, are not admitted. Those in the rectum can be colotomied, and thus their proportion is perhaps increased. Going back for nearly six years, I have collected 100 cases of rectal carcinoma, and of these I find that 70 occurred in males and 30 in females. The proportion is usually reckoned by most authors to be equal.

Carcinoma attacks the rectum not infrequently at a very early age, and I thought it would be of interest to tabulate the number of cases with the respective decades in which they occurred.

Thus in the 100 cases from the

11th—20th year	there were	2 cases,	both at 18
21st—30th	„ „	5 „	
31st—40th	„ „	19 „	
41st—50th	„ „	19 „	
51st—60th	„ „	37 „	
61st—70th	„ „	16 „	

and from the 71st year upwards there were 2 cases at 71 and 72.

Though I do not wish to weary you with statistics, I must ask you to allow me to give a table showing the comparative frequency of carcinoma in the various parts of the alimentary canal. Compared with the 100 cases of rectal disease admitted during the six years, there were of the mouth 86 cases, including disease of the lips, tongue, floor of mouth, and tonsils; pharynx, 5 cases; œsophagus, 36 cases; stomach and pylorus, 28 cases; small intestine, 1 case; large intestine, 32 cases; and anal margin, 2 cases. Diseases of the mouth, pharynx, œsophagus, and anus, would be of the squamous celled type, that of the stomach intestine and rectum of the columnar celled type.

I have endeavoured to follow up 36 cases which were admitted to the hospital between June, 1898, and the end of 1900, a period of two and a half years. Nearly all these cases were treated by inguinal colotomy, and I have not included those treated by excision of the rectum, since the discussion of this matter is not touched on here.

Before giving details I should add that the numbers are so few, that I cannot pretend that they are of any use from a statistical point of view. I would have extended my inquiries to a remoter period, had I not found that it was exceedingly difficult to obtain answers from persons who had left hospital more than two years, or from their friends. If the numbers are somewhat scanty, they may yet serve to direct one's thoughts in the right direction, and to indicate in some degree the value of surgical interference in this disease in prolonging life.

The information gained was simply this. Out of 20 cases who replied, 3 had refused operation in the hospital, and they

lived four, nine, and eleven months respectively after leaving it. Out of 17 cases in which colotomy was performed, 3, worn out by emaciation and exhaustion before admission, died in hospital, twenty-five, twenty-six, and thirty-six days after colotomy; 11 died at home at the following periods after operation, 1 at one month, 3 at four months, 3 at six months, 2 at seven months, 1 at eight months, and 1 at twelve months; 3 are still alive at seventeen, eighteen, and twenty-three months respectively.

Of these three, the first, a woman, æt. 56, passes blood, and sometimes *fæces per anum*, is a martyr to pain, and "prays" to die.

The second, a man, æt. 30, has had symptoms of carcinoma for two and a half years, and has been colotomied for eighteen months. The growth is now involving the anus, and protruding from it. When I last saw him, four months ago, he could do his day's work, could walk about briskly, and did not look very cachectic. He was troubled by pain and hæmorrhage, but not I should say severely, and he obtained much relief from morphia suppositories. He wrote to me last week that he was in much the same condition.

The third surviving case, a man, æt. 42, colotomied now twenty-three months ago, wrote to me last week that the operation continued to act pretty well, that he was sometimes better and sometimes worse, and that occasionally he had very bad turns with much pain and discharge.

These figures do not point to any great benefit to be derived from colotomy as far as time goes, with the exception of the last two. Three only out of seventeen survived more than twelve months. One must not forget that the poor man puts off treatment as long as possible, and does not care to give up work while he finds it possible to continue it. His conditions of life after operation also are far removed in degree of comfort from those of the rich man. Still, I venture to think that the expectation of life after colotomy is nearer the mark I have given, than the two or three years one hears so constantly quoted as being the regular thing.

Quite a number of cases of rectal carcinoma live their appointed time, and die of exhaustion, without the need of surgical interference to relieve obstruction. Whether they can in all cases be benefited by the diffuence of their intestinal stream through an artificial anus, and whether this, while prolonging their existence, gives them more happiness and comfort, is a matter of some debate.

In the case of a palliative operation performed for a fatal disease, the thing to be considered is the relative degree of comfort to be obtained. We must weigh the discomfort, pain, and danger attending the time under treatment, and the inconvenience as in these cases of the colotomy wound, with the few months to be gained in existence—that existence being at the best, probably, but a miserable substitute for healthy life. But after all, one cannot deny that in most cases the physical suffering in unrelieved carcinoma of the rectum, is immeasurably greater than when colotomy has been properly performed.

Patients, especially those of the better classes, shrink from the idea of an artificial anus when it is explained to them. Many consider that life will be unendurable under these conditions, and it is the mental rather than the physical pain that troubles them. Colotomy should, however, be urged in nearly every case, and that this is the correct line of treatment can be vouched for by most medical men. On the one hand we have the regular and painless relief of the bowels through the colotomy wound, and a death from exhaustion. On the other hand we have the man whose incontinent sphincter is continually discharging blood, slime, and fæces, or who is suffering from recurring obstruction, which at any time may terminate his existence in a very painful manner. Perhaps it should be added that fistulous communication with the bladder, and growth involving the sacral plexus and pelvic walls, is likely to be more common after colotomy. Certainly, if this is the case, the benefit acquired by the prolongation to life is more or less cancelled by the agony of this very distressing complication. Our patient were better dead than comatose from morphia, and

when we hear him praying to die to obtain relief, we may honestly ask ourself what benefit, if any, he has derived from surgery. Fortunately, I believe that patients who do not derive a great, if not a vast amount of relief from colotomy, are rare, and therefore I re-affirm my statement that the operation should be urged in nearly every case.

Before closing this paper I wish to draw attention to the fact that many patients and their friends are under the impression that the palliative operation is a radical one. To many of the lower classes it is quite impossible to explain the difference. They consider that an operation can only be for one purpose, that of curing, and should a patient succumb afterwards, it is usually the operation that killed him.

Several relatives and friends of old patients have written to me such answers as the following: "The operation did him no good"; "it did not cure her"; and again, "she got worse and worse after it"; all of which seemed to show the operation was blamed for the subsequent suffering, and sometimes for the fatal termination.

MEDICAL ABSTRACTS.

REPORT ON RENAL AND URINARY DISEASES.

BY PROF. ROBERT SAUNDEY, M.D., M.SC., LL.D., F.R.C.P.

DIABETES.

Lépine, R. *Traitement du Diabète Sucré.*—*La Semaine Médicale*, 1901, p. 361.

After passing in review such points as the need for the careful study of the habits of each patient, the exact determination of the total quantity of urine excreted in twenty-four hours, of the relation of the total sugar to the total urea, the presence of albuminuria, acetonuria, diaceturia, Prof. Lépine proposes to

classify diabetes for treatment into (I) cases of diabetes not having diacetic acid in the urine, which he further divides into (*a*) those in which the glycosuria disappears on strict diet, and (*b*) those in which the glycosuria is only diminished after strict diet; and (II) cases of diabetes with diaceturia, also divided into (*a*) where the diacetic acid disappears under appropriate treatment, and (*b*) where it persists in spite of treatment, a prognostic sign which is nearly always fatal.

The group of cases which he classes under *Ia* require for their treatment solely a diet which is sufficient to maintain nitrogenous equilibrium. He recommends that for a few days the patient should be allowed to vary his ordinary diet before being put upon any strict regimen, and states that when such a patient has been placed upon anti-diabetic diet for a few weeks, he will have recovered a considerable amount of his capacity for assimilating carbohydrates, and may be allowed to resume the consumption of such quantities as a few experiments show him to be capable of assimilating without inconvenience; this result, however, is one which undergoes fluctuations, and it is highly desirable that such cases should continue under medical supervision and guidance.

The group *Ib* is more difficult to manage, and one is tempted to put them upon strict meat diet, but Prof. Lépine regards this as being dangerous on account of its tendency to irritate the kidney and to develop the acid dyscrasia. Without going so far as to admit the existence of renal diabetes, he recognises that albuminuria dependent upon renal irritation is often present in diabetes, and constitutes a source of danger by favouring the occurrence of diabetic coma, and he believes that a kidney so irritated may become more permeable to sugar and permit an excessive excretion of glucose. He also regards the use of fat in large quantity as not free from danger, because it may be a source of the production of acetone.

In group II, Prof. Lépine is not very clear how he would differentiate them into his classes (*a*) and (*b*). He admits that the addition of carbohydrates to the diet is often followed by

the diminution of the diaceturia, but he objects to this plan, as it invariably increases the glycosuria and is injurious to the patient. He refers to the suggestion of Schultzen, who recommended the use of glycerine for this purpose, but adds that unfortunately experience has not borne out the validity of Schultzen's theory. He then draws attention to a recent paper by Schwartz (*La Semaine Médicale*, 1901, p. 150), who recommends a derivative of glucose, gluconic acid, that is to say, glucose already in part oxidised, which should diminish diaceturia better than glucose by completing its combustion in the economy of the diabetic. If this fact were well established we should possess the means of making up to the diabetic the loss due to the non-destruction of glucose. A case has been recently recorded by Schwartz (*Prag. Med. Wochensch.* July 25th and August 1st, pp. 361 and 376) which suggests that gluconic acid has such value. It was that of a young man, twenty-eight years of age, who was suffering from severe diabetes with pulmonary phthisis. During the six weeks he was in the hospital at Prague he underwent three attacks of diabetic coma with increased excretion of acetone dependent upon dyspnœa. On the first occasion after he had lost consciousness he was given 70 grammes ($2\frac{1}{3}$ oz.) of gluconic acid in half a litre of water neutralised by bicarbonate of soda and 140 grammes ($4\frac{2}{3}$ oz.) of the latter salt by the mouth and bowel. Although the urine was still acid consciousness returned, the dyspnœa disappeared, and the patient remained better for three weeks, but after an increased quantity of fat in his diet—600 grammes (20 oz.) of beef fat in three days—the acetonuria returned, and there was a second attack of coma with dyspnœa. Five hours after the commencement of this fresh attack 50 grammes ($1\frac{1}{3}$ oz.) of gluconic acid were administered in alkalised water. This treatment was again followed by recovery, which lasted fifteen days, when coma again supervened, and as there was no gluconic acid available the patient was treated exclusively by bicarbonate of soda, but died on the third day.

The case is interesting although it is not in itself sufficient to

prove the value of the remedy, yet, in face of the fact that diabetic coma is one of the most fatal of complications, it is highly desirable that supplies of this substance should be available, and that it should be given a trial when opportunity arises.

Mossé, M. A. *The Potato Cure of Diabetes and Diabetic Complications.*—*Bulletin de l'Académie de Médecine*, 1901, No. 41, p. 769.

The author classifies the various forms of carbohydrates in relation to diabetes into (1) injurious; (2) useful; (3) doubtful. He places potatoes in the last class, for in spite of what has been said in their favour by many medical authorities they are generally excluded from diabetic dietaries in France as well as abroad, and in France those who do allow them only give from 100 to 200 grammes (from 3 to 10 ounces) daily. He believes that he has proved that potatoes are not only permissible, but may be with great advantage substituted for bread in sufficiently large doses to take the place of the latter, that is to say, in the proportion of 2 to 3 times the weight of potatoes to 1 of bread. The amount employed by him has varied from 1 to 1½ kilog. (2 to 3 lbs.) daily. He claims that upon this diet he has seen rapid diminution of thirst, polyuria, and glycosuria with corresponding improvement in the general condition. He prefers to give potatoes cooked by baking. In 19 out of 20 cases where they have been used the result has been more or less favourable. He gives the following comparative table to show the chemical constitution of bread and potatoes respectively :—

	Water.	Albuminoids.	Fats.	Carbohydrates.	Salts.
Paris bakers' bread	36·5	7	0·2	55·3	1
Potatoes	73	2·80	0·2	23·2	0·8

The cases related are with one exception very brief and for the most part are mild examples in elderly persons. In a case of so called "diabète maigre" in a young man, æt. 24, the effect of the potato diet is not remarkable, for example, the total sugar in two periods of bread diet was 659 and 644

grammes, while on potato it was 584 and 537 grammes; when taking both potatoes and bread it was 588 grammes. In another case of the same class in a man, æt. 47, no figures are given, but we are merely told that the result was favourable. In several cases of surgical diabetes, or at least diabetes complicated by surgical lesions, the wounds healed after the patient had potato substituted for bread. It is noteworthy that in no case is the weight of the patient mentioned, or the influence of the diet upon the body-weight given. In two cases the fæces were examined and compared, and we are told that the result was to show that the starch of the potato was as well absorbed as that of bread; the figures are given for one case, the average quantity of carbohydrates contained in the fæces for four days when the patient was taking bread being 0.460 grammes, while on potato it was 1.221 grammes; the amounts are very small, so small as to leave doubt in one's mind as to their correctness. He explains the good results of potato diet by the large proportion of salts, chiefly salts of potash; he calculates that the amount of potash salts is 4.9 grammes per kilogramme; he therefore regards the treatment as an alkaline cure. He considers that he has had better results with potato treatment than with any other method he has lately tried, including pancreatic preparations and beer yeast. He thinks each case must be watched carefully, as there may be individual idiosyncrasies which may make it unsuitable, as it appeared to be for one of his cases without any obvious reason. He suggests that it may be bad for cases complicated by albuminuria, because potash salts increase the toxicity of the blood.

After reading the paper carefully, I am not convinced that the author has shown that the action of potatoes is curative, although, compared with such a highly injurious article as bread, they are distinctly beneficial. The figures might be more convincing, and I should be glad to know the effect of the diet upon the weight of the patients; but it must be allowed that 1,500 grammes of potato contain about as much starch as 400 grammes of bread, so that if on the former diet there is

diminished glycosuria and improvement in the general condition of the patient, this cannot be attributed to withholding carbohydrates, and is probably due to the different form of starch.

The superior assimilability of potato starch has been maintained by several writers, for example, I have said: "as a rule potatoes are tolerated better than an equivalent quantity of bread," but I prescribe potato in small quantities of 6 oz. daily, while M. Mossé gives 1,000 to 1,500 grammes (2 to 3 lbs.). The latter has not proved that this quantity of potato can usually be taken without being attended by a considerable amount of glycosuria, for example: in case I, the lowest point reached is 53 grammes (795 grains); in case IV, it fell to 35 grammes (525 grains); and in case VIII only did the sugar disappear completely, so that this result must be regarded as exceptional even in mild cases, while in the only severe case (case X) the effect of the change of diet was not very marked.

The communication is useful in again drawing attention to the value of potatoes as an article of diet in diabetes, especially in its milder form; and the suggestion that they may be safely given in larger quantities must be carefully tested. It is very much better to feed diabetic patients upon potatoes than upon expensive preparations which are beyond the resources of the poor, and are in most cases far from palatable. At the same time it is, in my opinion, highly desirable to put every diabetic patient, in the first instance, upon a strict diet for a time, in order to remove the excess of sugar from the blood, and even after he has been allowed potato or other carbohydrate in such form and quantity as he can assimilate it will be necessary for him, from time to time, to return for brief periods to strict diet whenever any of the old symptoms, such as thirst or polyuria, return.

Lépine and Boulud. *Destruction by the Pancreas of a Substance which hinders Glycolysis.*—*Lyon Médical*, No. 1, 1902.

Lépine and Boulud have extracted from the urine in diabetes and in pneumonia a crystallisable substance which causes glycosuria when injected under the skin of a guinea-pig, or introduced

into the jugular vein of a dog. When a small quantity of this substance was mixed with normal defibrinated dog's blood, and the mixture kept at a temperature of 38° to 39° C. for one hour, it was found that the blood had only lost very little of its reducing power, and very little of its fermentable sugar, whilst with normal blood under the same conditions there was a marked diminution of the reducing power, and a complete, or almost complete, disappearance of the fermentable sugar. To a litre of defibrinated normal dog's blood was added a little of this substance obtained from the urine of a pneumonic patient. This blood was then passed through a large piece of isolated dog's pancreas. The blood collected from the chief vein, immediately after its passage through the pancreas, was found to have recovered its glycolytic or sugar-destroying power. It was thus shown that (1) a crystallisable substance can be extracted from the urine in various diseases (diabetes and other affections) which has the power of hindering glycolysis (or sugar destruction); (2) this substance is destroyed in its passage through the vessels of the living pancreas; (3) therefore, in addition to its other functions, the pancreas has an important antitoxic action.

Lépine and Boulud. *Upon the Estimation of the various kinds of Sugar which may be present in Diabetic Urine.*—*Revue de Médecine*, July, 1901.

The three methods used for determining the amount of sugar in diabetic urine (the polarimeter, Fehling's solution, and fermentation) are subject to certain causes of error due to (1) so far as the polarimeter is concerned, the presence of left rotatory substances (oxybutyric acid, glycuronic acid), or sugars more right-rotatory than glucose (maltose), or sugars which do not affect polarised light (pentose); (2) with Fehling's solution there is the unequal reducing power of different sugars, and the existence in the urine of reducing substances which are not sugar; (3) finally, as regards fermentation, the different amounts of carbonic acid gas formed by different sugars, or by the same

sugar under different conditions, and the fact that some sugars are not fermentable. Where the quantity of reducing substances present in the urine exceeds greatly the amount of sugar indicated by the polarimeter it is probable that oxybutric, or glycuronic acid, or pentose, is present. If, on the other hand, the quantity of sugar indicated by the polarimeter is greatly in excess of the amount of reducing substances, the probability is that maltose is present; or, finally, as is much more commonly the case, the indications furnished by the polarimeter and the reduction of copper are about the same, from which one may conclude that the sugar present is glucose.

Munch, F. *Existe-t-il un Diabète Rénal?*—*La Semaine Médicale*, No. 11, p. 81.

The value of this article is mainly historical as it contains no new facts. It gives a brief account of all the papers and cases bearing upon the subject hitherto published. The author's conclusion is that so far the existence of renal diabetes has not been established, but that such cases as Lépine's prove that the permeability of the kidney plays a certain part in the elimination of sugar from the blood by the kidney, so that it is permissible to speak of a renal element in diabetes, although not of renal diabetes.

BRIGHT'S DISEASE.

Surgical Intervention in Nephritis. A discussion, which has taken place upon this subject in the Society for Internal Medicine at Berlin, is reported in *La Semaine Médicale*, February 5th, 1902.

J. Israel said that for the last ten years his attention had been drawn to cases presenting symptoms very like those of nephritic colic due to stone, which resisted all ordinary therapeutic means and required operation, but which showed the presence of inflammatory processes in the absence of stone, and were cured by operation. He attributed the good effects of nephrotomy in part to relief of tension of the kidney and also to relief of

congestion. He did not pretend that the knife should be the remedy for all cases of nephritis, and denied that he had ever proposed surgical interference for Bright's disease. As to his results, out of eleven patients upon whom he had operated, six were definitely cured, in one hæmorrhage and colic recurred on the opposite side, in two the symptoms reappeared after two years, and in two the operation was without benefit. In addition there were three fatal cases not included in this list, but which occurred at a time when the surgical indications were less clear, and it was necessary to have recourse to catheterisation of the ureters and to other means of diagnosis calculated to make the operation more serious.

Klemperer defended the reality of nervous hæmaturia and quoted a case where the kidney was extirpated for abundant renal hæmorrhage, but on examination with the microscope the organ was absolutely healthy. He had never seen acute nephritis by itself produce renal colic. If this occurred it must be due to a nervous element. Israel seemed to call cases of operable renal disease, nephritis, and those that are not, Bright's disease, but Bright's disease is not always bilateral, and reciprocally simple renal inflammation is not always localised. He thought the operation not justifiable except in cases of anuria due to mechanical causes, or in the presence of pain of such intensity that the patient is prevented following his usual occupations, or where hæmorrhage was so severe as to endanger life.

Casper reported two cases of periodical renal trouble simulating nephritic colic. The attacks recurred in one case every fortnight, in the other every month, and both were cured by simple nephrotomy. Although renal tension was not proved to exist at the operation the speaker admitted that the cause of the symptoms was intermittent tension.

Zondek believed that it was very difficult if not impossible to exclude with certainty the existence of a small renal calculus even after the kidney had been laid open and incised.

Senator recognised that Israel had not proposed to operate in Bright's disease, but other surgeons who had followed in his

footsteps had gone further than himself. No doubt hæmaturia occurs in acute nephritis, but neither acute nor chronic inflammation by itself will cause colic. Colic may often be due to adhesions of the kidney, and therefore excision of this organ may often effect a cure. In his opinion laying open the kidney is only justified in cases of anuria, and not for either hæmaturia or colic.

Mayet. *The Causation of Cardiac Hypertrophy by Nephritis.*—*Lyon Méd.*, January 19th, 1902.

Mayet has observed hypertrophy of the heart directly consecutive to toxic nephritis in two experiments, undertaken to investigate the pathology of cancer. Two rabbits were inoculated with an aqueous extract of macerated human cancer, after being previously treated by subcutaneous injections of cantharidine in oil, in order to determine the localisation of the malignant growth by means of a renal lesion. In neither case was any malignant growth found *post mortem*, but in both distinct nephritis as well as marked hypertrophy of the left ventricle was seen. The first rabbit, which weighed 1,885 grammes, received in five doses $1\frac{1}{2}$ mg. of cantharidine between May 19th and June 1st, 1895. Albumen was found in the urine soon after the first injection, but disappeared again after the third. After a transitory loss of weight, the animal thrived until December, when it showed signs of spasmodic paraplegia (due to myelitis caused by cancerous toxins) and died in January, 1896. On examination, the kidneys were increased in size and showed a uniform and gray surface on section, there being no sharp distinction between cortex and medulla. The wall of the left ventricle was much thicker than normal, being twice the normal size as seen in other rabbits of similar weight. In the second case, the rabbit was much larger, weighing $3\frac{1}{2}$ kilos. The same dose of cantharidine, $1\frac{1}{2}$ mg., was administered in three injections. The urine contained albumen after the first dose, but not after the third. The animal wasted rapidly and died in a state of profound cachexia. The kidneys were found in the

same condition as those of the first animal, and the left ventricular wall was noticeably thickened, though not so much as in the first case. Thus a diffuse nephritis of toxic origin produced marked enlargement of the left ventricle within a few months in both instances, the duration in the second case being the shorter of the two.

Tuffier and Milian. *Hæmoglobinuria due to Toxic Action of the Urine.*—*La Semaine Médicale*, 1901, p. 342.

The authors describe a case of acute nephritis with albuminuria in a woman who was attacked after a grave burn; the urine contained albumen, hæmoglobin, and leucocytes. There was no hæmoglobinuria in the blood serum, while the hæmolytic action of the urine disappeared when it was heated to 120° C., and reappeared after exposure to the air. In this case, the hæmolytic action of the urine seemed to be due to its toxic properties, and not to osmosis.

Milian. *The Cyto-diagnosis of Albuminous or Hæmorrhagic Urine.*—*La Semaine Médicale*, 1901, p. 341.

The examination of the cells deposited by albuminuric or hæmorrhagic urines has given, in the hands of Milian, the following results: in a case of renal tuberculosis with hæmaturia, the hæmorrhage was accompanied by a marked elimination of mononuclear leucocytes and lymphocytes, whereas polynuclear leucocytes were rare; there were also a few pigmented casts. On the other hand, in an individual with epithelioma of the kidney there were no casts; there were only in addition to red blood corpuscles flat epithelial cells such as are observed in all urines. In a case of acute nephritis with hæmaturia, the urine contained a great quantity of polynuclear leucocytes. Where the albuminuria was cardiac, or due to stasis, there were no cells except red blood corpuscles. In the case of a man with sub-acute nephritis of unknown origin the urine contained an equal number of polynuclear and mononuclear leucocytes with a relatively large proportion of eosinophiles. Febrile albuminuria

was observed to occur in two different ways; in some the leucocytes were abundant, in others they were absent. Amongst the former were cases of articular rheumatism and diphtheria; among the latter enteric fever and pneumonia. The author suggests the possibility that in the latter cases the albuminuria was merely due to stasis.

MISCELLANEOUS.

Rem-Picci, M. G. *Albuminuria following Cold Baths.*—*Bollet. della R. Accad. med. di Roma*, XXVII, 2.

The author finds that albuminuria is nearly constant after immersion in cold water. If the temperature does not exceed 12° C. (53·6° F.), an immersion of three or four minutes suffices to cause it, but if the temperature is from 12° to 20° C. (53·6° to 68° F.) it requires longer. Above the latter figure albuminuria does not occur. The albuminuria in all the experiments was always very slight, and consisted of a mixture of serum, albumen, and globulin, often accompanied by a few casts and sometimes, but not always, by polyuria. It came on rapidly at the end of about ten minutes, and ceased after some hours. In discussing the cause, the author does not believe that it can be attributed to an alteration of blood pressure, but considers that it is a reflex manifestation. The author considers cold baths in winter may be prejudicial to health, and thinks that they should be absolutely forbidden to every one who is not quite healthy, especially to those suspected of early renal disease.

Cramer, H. *Emulsion Albuminuria.*—*Munch. Med. Woch.*, January 21st. 1902.

H. Cramer describes a condition of urine which he calls "emulsion albuminuria," which he found in two cases of fatal eclampsia and in one case of fatal uræmia. The clinical histories were those of very severe cases. The urine appeared milky, was acid, and was of a yellowish brown colour. The emulsion did not disappear on filtering nor on centrifugalisation. The addition of acid as well as heating did not clear up this

condition. Dilution with water and a few drops of acetic acid or liq. potassæ, however, cleared the urine of nearly all the cloudiness. Boiling produced a heavy cloud, which interfered with the emulsion. The urine contained no fat (ether-alcohol and osmic acid tests). The addition of pepsin and HCl cleared up the milky emulsion, but HCl alone did not do so. Further chemical analysis showed that the emulsion was probably due to albumen, with some allantoin and uric acid. The microscopic examination revealed small rounded bodies, varying in size, but not unlike cocci, but bacteriological culture showed that they were not micro-organisms. Cramer regards the emulsion of the albumen as the result of an excess of albumen in the small quantity of urine—fluid excreted by the patients suffering from severe eclampsia and uræmia. He suggests that the occurrence may be of considerable prognostic importance.

Klemperer, M. G. *The Prophylaxis of Oxalic Renal Calculi.*—*La Semaine Médicale*, 1901, p. 422.

At a meeting of the Berlin Medical Society Klemperer observed that it was very difficult to eliminate from the diet of oxaluric patients all articles of food susceptible of producing oxalic acid, as this would amount to entire abstinence from meat and vegetables. It was therefore better to try to give these patients drugs capable of dissolving this acid and consequently preventing its precipitation. With this object the speaker recommended the salts of magnesia; in addition he forbade milk, which is rich in lime but poor in magnesia, eggs, and all vegetables containing much oxalic acid: on the other hand, he allowed meat, fatty substances, dry vegetables, and starchy foods. This diet is supplemented by the administration of 2 grammes (30 grains) of sulphate of magnesia. Senator expressed his general agreement with the views of Klemperer, and said that the oxaluria of young subjects was probably explained by the milk diet which predominated at the early part of life.

REVIEWS.

THE CAUSES OF DEATH AMONG THE ASSURED
IN THE SCOTTISH WIDOWS' FUND.*

DR. CLAUD MUIRHEAD'S report of the causes of death among the assured in the Scottish Widows' Fund from 1874 to 1894 inclusive forms very instructive reading. The deaths are divided amongst three periods of seven years each, and are classified under thirteen headings. Only those occurring among men are considered, and they amount to no less than 9,163.

The first class includes the deaths from zymotic and contagious diseases, and it is interesting to note that these increased from 161 and 177 in the first two periods to 311 in the seven years from 1888 to 1894. This increase appears to have been entirely due to the outbreak of influenza, which was responsible for no less than 142 deaths in the latter period. During the same period the number of deaths from typhoid fever amounted to about 68. We note with surprise that the average age at time of death from typhoid fever was 42 years; but the average age of death from the specific fevers in general is still more astonishing, being but little short of 50 years. The other specific disorder to which special interest attaches is rheumatic fever, which was responsible for 58 deaths, at the average age of 41, the average age of entry of these cases into the Association being 32. Only 7 per cent. of the deceased members gave a history of inherited rheumatism; but 30 per cent. had suffered themselves from previous attacks. The report appears fully to justify the unwillingness of Insurance Offices to accept at ordinary rates applicants with a previous history of rheumatic fever.

* The Causes of Death among the Assured in the Scottish Widows' Fund and Life Assurance Society from 1874 to 1894 inclusive. Reported by Claud Muirhead, M.D., F.R.C.P.E., Medical Officer of the Society. Edinburgh: R. and R. Clark, Limited. 1902.

The total number of deaths from cancer in the 21 years covered by the report was 539, of which 252 occurred during the last of the three septennial periods. This increase in number has been accompanied by a serious decrease in the average age at the time of death, which was 61 in the first, and 59 in each of the two later periods. Dr. Muirhead rejects the theory that the apparent increase in mortality from cancer is to be explained by greater diagnostic skill. He is inclined to recommend the non-acceptance at the ordinary terms of individuals whose family history shows any taint from this disease.

In contrast to the disease just considered, the mortality from pulmonary phthisis shows a steady diminution, not it is true in the actual number, but in the percentage of deaths recorded. At the same time, Dr. Muirhead points out that the death rate from this cause is higher than should be the case were the medical examination always as efficient as it ought to be, no less than fifteen members having died from phthisis within a year after their acceptance. Dr. Muirhead rightly urges that greater attention should be paid to such matters as increased pulse rate, cough and dyspepsia as suggestions of early mischief. A very interesting comparison is made between a series of 524 deaths from phthisis and another series of 502 from apoplexy. In only 35 per cent. of the former was there a family history, certain or suspicious, of phthisis, whereas no less than 47 of the second series gave a similar history.

We cannot follow this interesting investigation further, though it is throughout well worth a careful study. One point, however, we notice with surprise, namely, the small extent to which the mortality in this office has been traced to alcoholism. Indeed, no special consideration is given to the subject. A very important statement on this point was made two years ago by Drs. T. Colcott Fox and S. W. Carruthers, medical referees of the Mutual Life Insurance Company of New York, who traced a very large proportion of the premature mortality of that office directly or indirectly to the influence of alcohol. In the report now before us, the number of deaths directly due to alcoholism

was only 22, and those due to alcoholic cirrhosis of the liver numbered only 127. We think, however, that some consideration of the effects of alcohol in causing death through other diseases, such as those of the kidneys and blood vessels, would have led to greater stress being laid upon this source of danger.

SURGICAL DISEASES OF THE KIDNEY AND URETER.*

THIS volume opens with an account of tumours of the renal pelvis, a subject which has not until quite recently attracted the attention it deserves. Such tumours are not common, but they are sufficiently common to make it essential that the surgeon, in investigating a case of hæmaturia, should constantly bear in mind the possibility of the presence of a growth in the pelvis of the kidney. The result of leaving such a tumour without due recognition and treatment is disastrous. "Villous papilloma (of the renal pelvis)," says Mr. Morris, "though histologically innocent, is clinically far from being so. It extends over a longer period than a malignant tumour, but in the end is as certainly fatal." Again, writing on the same subject, he says, "The only hope of curing the patient is by performing nephrectomy in good time."

On the subject of renal calculus, Mr. Morris speaks, of course, with great authority, and this section of the book is in every way most admirably written, and the subject is discussed in the fullest possible manner. As regards the occurrence of pain in the opposite kidney being caused by renal calculus, Mr. Morris says that, so far as his experiences and researches go, there is not a single case, which affords satisfactory evidence of symptoms on one side only being caused by a stone in the kidney of the other side. Discussing the value of radiography in the diagnosis of

* Surgical Diseases of the Kidney and Ureter, including Injuries, Malformations, and Displacements. By Henry Morris, F.R.C.S. In two volumes. Vol. II. London: Cassell and Company. 1901.

renal calculus, the author rightly says that the whole length of the ureter, as well as the kidney, requires to be tested, because a stone in the ureter may cause symptoms entirely referred to the kidney. On the whole, much reliance does not seem to be placed by Mr. Morris on this method of diagnosis, so far as renal calculus is concerned. We notice that the author says that, in searching a kidney for calculus, an incision should be made along the convex border of the organ and that, through the wound so made, the right index finger should be introduced and a careful detailed manipulation made of every part of the interior of the organ. We have one question to ask in relation to this piece of advice, namely—Can the interior of the renal pelvis be properly searched with the finger? Looking at the form of the renal pelvis and calyces, it seems evident, as Mr. Jordan Lloyd pointed out some years ago, that the finger is not so efficient an instrument in searching for a calculus in the pelvis of the kidney, as is a child's bladder-sound. Of course, the exploration of the kidney pelvis with the finger is rendered much more easy, when the kidney is brought out on to the surface of the body, as Mr. Morris advises should be done; but this is by no means always possible.

We would specially commend the chapter on calculous anuria, as being an exhaustive and at the same time an interesting account of the subject. The section, too, on the operations on the kidney is excellent, as is that on the diseases of the ureter. The accounts of the plastic operations on the ureter are clear and precise, and the plates illustrating them are good, and we should advise anyone desirous of obtaining the latest information on the subject to carefully read this section.

Mr. Morris's book is worthy of the highest praise, and must for a long time remain the leading work on Renal Surgery in the English language.

LECTURES ON CHEMICAL PATHOLOGY
IN ITS RELATION TO PRACTICAL MEDICINE.*

It has not often fallen to our lot to review a more thoroughly satisfactory book than Professor Herter's collection of Lectures on Chemical Pathology in relation to the Practice of Medicine. There is no question as to the need of such a book. The knowledge gained by modern research upon the chemical processes of the body in health and disease has, or should have, the most intimate bearing upon every-day medical practice. But hitherto it has been no easy matter to obtain access to any reasonably brief and connected statement of the facts, nor do we know of any book which has especially attempted to bring out the practical lessons to be learnt from their study. Dr. Herter has supplied both these wants in a very admirable manner. His lectures are sufficiently condensed to appeal to anyone who makes any attempt to keep up his medical reading; and the facts of chemical pathology—often rather dry facts under ordinary treatment—are dealt with in so interesting a fashion as to render the study of the book a very pleasant task. Finally, the bearing on practical medicine is kept constantly in view, and he would be a dull man indeed who did not gain from it many most valuable hints.

The lectures are thirteen in number, and deal almost exclusively with the chemistry and chemical pathology of the processes carried on in the alimentary tract. The first lecture, on the chemical defences of the organism against disease, is the only exception to this statement. It deals with a large number of highly important questions, such as the defences against bacterial invasion, the formation of antitoxins and hæmolytins, processes of "detoxication," and the like. To this follow four chapters on the chief food stuffs and their

* Lectures on Chemical Pathology in its Relation to Practical Medicine. By C. A. Herter, M.D., Professor of Pathological Chemistry, University and Bellevue Medical School, New York. London: Smith, Elder and Company. 1902.

fate in the body in health and disease, the successive lectures being devoted to the carbohydrates and fats, the proteids, water and the inorganic salts, and finally alcohol, the organic acids of the food and tea and coffee. These lectures are invaluable for the numerous practical suggestions on the dietetic treatment of disease to which they give rise. The next four lectures deal with the subject of excessive fermentation and putrefaction in the digestive tracts and with the chemical pathology of gastric and intestinal digestion, and throw a very clear light upon the modern theories of the origin of disease by auto-intoxication. The ninth and tenth lectures are devoted to the chemical pathology of hepatic disease, and the two final lectures deal with diabetes, starvation, under-nutrition and obesity.

The study of this book suggests the immense importance of including a course of lectures on this most practical subject in the curriculum of our own University. Or perhaps such a course would be even more useful in post-graduate teaching. In either case, if handled with anything of the skill evident throughout Professor Herter's book, it would be a valuable addition to the practical instruction of our medical school.

THE TREATMENT OF NEURASTHENIA.*

WE have been much interested in reading Mr. Campbell Smith's translation of Messrs. Proust and Ballet's book on Neurasthenia. The translation is excellently done, and the book worth translating. We think, however, that the authors have rather spoilt their treatise by including in it almost every conceivable

* The Treatment of Neurasthenia. By A. Proust, Professeur à la Faculté de Médecine de Paris, and Gilbert Ballet, Professeur agrégé à la Faculté de Médecine de Paris. Translated by Peter Campbell Smith, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg. London: Henry Kimpton. 1902.

form of neurosis, from motor and sensory disorders down to tachycardia and the various forms of dyspepsia. Indeed, according to their treatment of the subject, we are compelled to regard neurasthenia as only a somewhat elongated term for neurosis, and with no more specific meaning. Our own idea of neurasthenia, on the other hand, is of a condition of nerve exhaustion arising without any very directly traceable cause, and we can by no means see the advantage of applying the term to such conditions as that of simple overwork or depression from grief or the generally neurotic state which is brought on by sexual excess. That there are conditions of feeble nervous health quite independent of such gross causes, we think it is useful to recognise, and to such we should prefer to restrict the term neurasthenia.

Taken as a description of nervous breakdown in general, the book, though somewhat sketchy, is on the whole satisfactory. As regards family history, the authors consider the chief predisposing cause to be a "neuro-arthritis" heredity. They regard the condition as being essentially a disorder of the male sex, men bearing to women in their collection of cases the relation of nearly three to one. Merchants, manufacturers, and clerks form more than fifty per cent. of their neurasthenic patients, and the more intellectual professions come far down in the list. Working men only afford six cases out of a total of 604. The chief "stigmata" of neurasthenia are said to be persistent headache, rachialgia, neuro-muscular asthenia, dyspepsia from gastro-intestinal atony, insomnia, and cerebral depression. Two main groups are described, consisting of those patients who are depressed and can hardly be induced to speak, and those who are excitable and talk too much. The illustrations are, of course, mainly taken from patients of the male sex. The general clinical description is, as we have said, that of neurosis of every variety.

THE WAR AGAINST CONSUMPTION.*

THIS book gives a general epitome of the chief opinions expressed at the recent Congress on Tuberculosis, which one of the authors attended as a delegate from the Kensington Royal Borough Council. It is intended to be read by the lay public, and is therefore written as far as possible in untechnical language. We are glad to congratulate Dr. Vinrace on having carried out his purpose in very excellent style.

Whether such books make for a really useful end, we confess that we feel some doubt. We have often expressed in this Review our opinion that books written for the general public on medical subjects are of rather questionable advantage. Yet it may be urged that the prevention of consumption can never be to any extent attained, until there is a widespread knowledge amongst the population of the conditions on which its dissemination depends. Indeed, we have to admit that one of the most striking features of the Congress was the unanimity with which the instruction of the public on the nature of consumption and the conditions which make for its extension was urged. Nevertheless, we still doubt the wisdom of dwelling too much upon these matters, and we note with interest that Dr. Frederick Roberts in his Lumleian Lectures has recently recorded a similar opinion. For this reason we hesitate to give too warm a welcome to Dr. Vinrace's book.

**A CONCISE HISTORY OF SMALL-POX AND
VACCINATION IN EUROPE.†**

IN publishing a really concise history of the progress and results of vaccination in Europe, Dr. Edwardes has done good service to the cause of public health. His exposition of the

* The War against Consumption. By Dennis Vinrace, M.R.C.S., L.S.A. Revised by John H. Vinrace, M.B. Lond., M.R.C.P. London: The Century Printing Company Limited. 1901.

† A Concise History of Small-pox and Vaccination in Europe. By Edward J. Edwardes, M.D. Lond., M.R.C.P. London: H. K. Lewis. 1902.

subject is very clear, and the proofs brought forward of the efficacy of vaccination and re-vaccination are absolutely conclusive. Some such concise and convincing statement was needed, if only for purposes of reference, and in this book both facts and conclusions are reduced to within a very reasonable bulk. Nor has this been done at the expense of thoroughness. We are glad to see that Dr. Edwardes takes up an uncompromising attitude of opposition to what he terms "the great surrender" of the last Act of Parliament, and that he would unhesitatingly support any proposal to introduce a system of compulsory re-vaccination. His book completely justifies his attitude on these questions.

HANDBOOK OF BACTERIOLOGICAL DIAGNOSIS FOR PRACTITIONERS.*

DR. EMERY is to be congratulated on his admirably practical Handbook of Bacteriological Diagnosis. Not a few books on bacteriological technique are in existence, but we know of none in which the instructions have been more carefully thought out, or more minutely recorded. In making examinations of this sort details are all-important, and much labour is lost, and much incorrect result obtained from carelessness or ignorance in small matters of procedure. We can confidently say, however, that if anyone who works from this book falls short of accurate work, the fault will lie with himself. The thoroughness which is characteristic of the book is also displayed in the instructions for making blood examinations, which Dr. Emery has usefully included in his Manual. There can be no doubt that the Handbook will be widely used by present and past students of the Birmingham Medical School, but we prophesy a much wider field than this for its usefulness.

* Handbook of Bacteriological Diagnosis for Practitioners, including Instructions for the Clinical Examination of the Blood. By W. d'Este Emery, M.D., B.Sc. Lond., Lecturer on Pathology and Bacteriology in the University of Birmingham. London: H. K. Lewis. 1902.

BURDETT'S HOSPITALS AND CHARITIES.*

APART from the official information conveyed, Sir Henry Burdett's annual volume is always of interest on account of the excellent critical work contained in its preliminary chapters. The special features of this year's publication are the chapters on Capital Expenditure and Cost of Nursing. Amongst the special incidents of 1901, on which Sir Henry comments, is the change of management recently effected in the National Hospital for the Paralysed and Epileptic, and we note that he views with disapproval the experiment, now on its trial, of working the hospital without a recognised head over the whole establishment. We shall look with interest for the final verdict on this point in future editions, when sufficient time has elapsed to enable judgment to be passed on the point.

Correspondence.**CONSULTANTS AND THE WORKING CLASSES.**

Sir,

As the difficulty created by the attempt to establish a Consultative Institution in the city excited a good deal of general interest in the profession, you may be glad to know that the scheme has been abandoned by its promoters. In the last report of the Birmingham Hospital Saturday Fund, where this is admitted, it is stated that "the claims of the more thrifty and self-respecting members of the community, to obtain consulting advice at a fee of half a guinea, rather than be forced to obtain it at the hospitals for nothing, have been set at nought." This statement, like so many others which have originated from the same source, is not true. The Consultants of Birmingham have all along maintained their willingness, under suitable

* Burdett's Hospitals and Charities. By Sir Henry Burdett, K.C.B.
London : The Scientific Press, Limited. 1902.

conditions, to see working men for half a guinea. Recently the Birmingham Ebenezer Provident Sick Society, one of the largest industrial organisations in the city, which had affiliated itself to the Consultative Institution, found itself obliged to look elsewhere owing to the failure of that scheme. The officials applied to the representatives of the Consultants, and the following correspondence shows the result.

I am, dear Sir, yours faithfully,

ROBERT SAUNDBY.

Birmingham,

19th April, 1902.

To the Editor *Birmingham Medical Review*.

Copy of circular addressed to Consultants.

87, Cornwall Street,
Newhall Street,
Birmingham.

Dear Sir,

A short time ago the Consultants' Representative Committee was approached by the executive of the Ebenezer Sick Provident Society to ask whether members of their Society could be seen for half a guinea. In reply the following letter was sent:—

Dear Sir,

In reply to your inquiry whether the consultants of Birmingham would be willing to see your members for a fee of ten and sixpence, I am requested to draw your attention to the following passage from a letter which appeared in the Birmingham newspapers on May 18th, 1901, which was signed by all the members of my Committee; and which has been acted on repeatedly. The passage is as follows:—
“The consultants and specialists in Birmingham agree to see any persons whose circumstances justify it for the modified fee of half a guinea upon the recommendation of a medical

practitioner, and where this cannot be obtained for any reason they will dispense with it, only reserving the right to protect themselves against abuse. If you should desire any further information Dr. Saundby and I would be glad to talk the matter over with you some afternoon, and if you will let me know I have no doubt we can arrange a time of meeting convenient to each of us.

"I am, yours faithfully,

"THOMAS WILSON,

Hon. Sec."

In consequence of this letter a meeting was held as suggested and it was agreed that members of the Ebenezer Sick Society would be seen by the consultants and specialists of Birmingham for half a guinea, on the condition that they should be people whose circumstances justified the concession, and it was further agreed to accept the recommendation of the Society as *prima facie* evidence of this fact. It was promised on behalf of the Society that no patient will be sent to a consultant except on the recommendation of one of the Medical Officers of the Society, and that the Society will not allow the few well-to-do persons who are members of the Society to obtain consultations under this arrangement. It was pointed out to the representatives of the Society that the Committee could not speak definitely for every individual consultant in Birmingham, but that it was able to do so for the great majority.

We shall be glad if you will kindly let us know before Saturday next should you not care to co-operate, so that we may take steps to prevent your being troubled with applications under this arrangement.

We are, dear Sir,

Yours faithfully,

ROBERT SAUNDBY. *Chairman.*

THOMAS WILSON, *Secretary.*

Consultants' Representative Committee.

Copy.

BIRMINGHAM EBENEZER PROVIDENT
SICK SOCIETY, STEELHOUSE LANE, BIRMINGHAM.

MEMORANDUM.

From

February 27th, 1902.

ALFRED MOLE,
Secretary,
16, Wretham Road, Handsworth,
Birmingham.

TO ROBERT SAUNDBY, ESQ.

Dear Sir,

We cordially endorse the Circular you propose sending to the Consultants of Birmingham in reference to the above Society.

JOSIAH COX, *President.*

ALFRED MOLE, *Secretary.*

Copy.

March 11, 1902.

Dear Sir,

I have now pleasure in sending you the list of Consultants which I promised to obtain for your private use. Enclosed is the complete list of all those Consultants who are able and willing to undertake to see members of your club on the conditions laid down at our meetings.

Believe me to remain, dear Sir,

Yours faithfully,

THOMAS WILSON.

Mr. Alfred Mole,
16, Wretham Road,
Handsworth.

(The result of the circular was to obtain a list of 53 Consultants including Specialists in all departments.)

I thank you very much for your letter and list of Consultants ; this I am sure will be very satisfactory to the Committee. This I have no doubt will be endorsed by resolution at the first meeting, in which case I will send you a copy. I venture to think that between us we have gone a long way in the settlement of a much vexed public question.

I am, dear Sir,

Yours very respectfully,

ALFRED MOLE.

Copy.

March 13th, 1902.

To THOS. WILSON, ESQ.

Dear Sir,

BIRMINGHAM EBENEZER PROVIDENT
SICK SOCIETY, STEELHOUSE LANE, BIRMINGHAM.

Committee Meeting Held March 27th, 1902.

COPY OF RESOLUTION.

“That this Meeting heartily expresses its warm appreciation of the manner in which the Consultants and Specialists of Birmingham have met this Society, whereby our members and their wives may receive expert advice for the nominal fee of 10/6.”

Signed on behalf of the Meeting,

ALFRED MOLE,
Secretary.

BRITISH ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE.

At the last meeting of the British Association, a special Committee was appointed to consider the conditions of health essential to the carrying on of the work of instruction in schools.

In the first instance the Committee are collecting information upon the following matters :—

1. A collection and tabulation of records of original observations on the periods of day appropriate for different studies, the length of lessons, and the periods of study suitable for children of different ages.

2. A collection and tabulation of anthropometrical and physiological observation forms in use in various schools with a view to preparing a typical form for general use.

3. A collection and tabulation of anthropometrical and physiological observations recorded in different schools for a series of years on the same children.

4. A collection and tabulation of recorded investigations into the causes of defective eyesight in school children and a definition of the conditions necessary for preserving the sight.

5. An inquiry into the practical knowledge of hygiene possessed by school teachers.

We are requested to bring these investigations under the notice of our readers and to ask their co-operation in obtaining information on the several points. Any facts or references relating to the subjects under consideration should be sent to the Chairman of the Committee, Prof. C. L. Sherrington, or to the Secretary, Mr. E. White Wallis, The Sanitary Institute, 72, Margaret Street, London, W.

University of Birmingham.



FACULTY OF MEDICINE.

First and Second Examinations for the Degree of Bachelor of Medicine and Bachelor of Surgery, April, 1902.

PASS LIST.

FIRST EXAMINATION.

Class I.

Bracey, Herbert Charles Horace.

Class II.

Austin, John Staines	Jotham, George Frederick
Crowe, Henry Neville	Roberts, Walter Rowland
Hayes, Lionel Chattock	Southall
Hunt, Richard Stuart	Walker, Spencer Graham
Wathen	Whitcombe, Edmund Stanley

SECOND EXAMINATION.

Class II.

Davies, Fred Thomas	Walsh, Fred Newton
Holloway	Warren, Herbert Henry

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

MESSRS. BURROUGHS AND WELLCOME send us two additions to their list of Tabloids, each of which contains ammonium chloride. The first consists of 3 grains of this drug together with 2 grains of extract of liquorice, the latter being added for the purpose of disguising the intensely saline taste of the chloride. The result is sufficiently successful to enable the tabloids to be used as lozenges. The second tabloid contains $\frac{1}{16}$ th grain of apomorphine hydrochloride in addition to the other two ingredients, and is intended for use especially in cases of chronic bronchitis, bronchorrhœa, and whooping cough.

New Books, etc., Received.

From Macmillan and Company, Limited—

The Treatment of Injuries by Friction and Movement. By WHARTON

P. HOOD, M.D. St. Andrews, M.R.C.S., L.S.A.

The Climates and Baths of Great Britain. Vol. II.

From John Wright and Company—

An Introduction to Dermatology. By NORMAN WALKER, M.D.

From Cornish Brothers—

Contributions to Practical Medicine. By SIR JAMES SAWYER, Kt.

From Young J. Pentland—

The Study of the Pulse, Arterial, Venous, and Hepatic, and of the
Movements of the Heart. By JAMES MACKENZIE, M.D. Edin.

From H. K. Lewis—

A Concise History of Small-pox and Vaccination in Europe. By
EDWARD J. EDWARDES, M.D. Lond.

We have also to acknowledge the following—

The Technics of Nephropexy and other Reprints. By GEORGE M.
EDEBOHLS, M.D.

Bullets and their Billets. By J. HALL-EDWARDS, F.R.C.P., F.R.P.S.

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6s. per annum, post free.

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review, should be sent direct to the Printers and Publishers,
Messrs. Hall and English, 36, Union Street, Birmingham.

THE
BIRMINGHAM MEDICAL REVIEW.
JUNE, 1902.

ORIGINAL COMMUNICATIONS.

A CLINICAL LECTURE ON
SOME CASES OF ACUTE CEREBRAL LESION.

BY ARTHUR FOXWELL, M.A., M.D., M.SC., F.R.C.P.,
PHYSICIAN TO THE QUEEN'S HOSPITAL.

WE have lately had several interesting cases suffering from acute cerebral lesions in the hospital, which have well illustrated various points of diagnosis and prognosis. I propose to-day to relate them to you.

Case 1.—Simon C., æt. 36, is still with us. He is a tailor's presser and eighteen years ago was under the late Sir Morell Mackenzie for "sore throat," which has left a perforation one-third of an inch in diameter in his soft palate with extensive cicatrisation, especially affecting the right side. It was probably of syphilitic origin and has made his speech very indistinct rendering any diagnosis of palatal paresis difficult.

On May 5th, about 5 p.m., he suddenly became giddy and fell down in the street, but was not unconscious: he could not rise because of weakness of his right arm and leg, but walked home with the assistance of a policeman. At the same time his speech became much more difficult to understand. Arrived at home, he drank some tea: the first cup he could lift to his mouth, but not the second, owing to increasing weakness of his right arm. He then went to bed, but in an hour and a half, feeling better,

he came downstairs unassisted. His right side again grew feeble and he had to be helped upstairs to bed once more. Next day, May 6th, he found his face on one side and could take food with difficulty, some coming out of his mouth and some returning through the nose. He was then brought to the hospital and admitted under my care.

On admission he was found to be intelligent, not emotional, and with good memory. He had great difficulty in enunciation, but no other form of aphasia. There may have been slight paresis of the right side of the soft palate. The lower half of the right face was markedly paralysed; the tongue was protruded strongly to the right and withdrawn slightly to the left. There was considerable paralysis of right arm and leg; this was least marked at the hip and shoulder which could be moved against slight resistance, but increased distally so that the fingers could be only feebly extended and were unable to grasp anything; the toe movements also were similarly weak, though the lower limb was less paralysed than the upper.

The plantar reflex was exaggerated on the right with dorsi-flexion of the whole foot; normal on the left. The knee-jerk was exaggerated on both sides, but more on the left; and in each case followed by a series of secondary contractions. Ankleclonus was easily obtained on the right side, but did not occur on the left. Touch was blunted over right side of face, right arm and right leg, especially hand and foot; the sense of localisation was also lessened as well as that of pain over the same areas. The distinction of heat and cold was similarly defective on the right side, and at first also in one or two areas on the left side. The right hand had marked loss of the stereognostic sense, even when full allowance was made for its weakness of grasp, *e.g.*, spoon was called scissors. Sight, smell and taste were unimpaired.

On May 7th, there was distinct improvement in arm, leg and right side of palate. Speech was also more distinct, and food no longer returned through the nose, but the facial paralysis remained unchanged. On May 8th, improvement continued.

Sensation also began to improve, the change in the temperature sense being no longer detected. The reflexes were less exaggerated, though there was still ankleclonus and dorsiflexion of the big toe on the right side. The right pupil was noted as being smaller than the left. On May 9th, there was very little difference between the power of the two legs, but paralysis of face and tongue was but little changed. The knee-jerk was still increased, especially on the left side, but the secondary contractions were less. Right pupil remained smaller. Touch, pain, and stereognostic senses remained as before.

May 25th. Discharged from hospital. There is now no sensory change of any kind. Sensations have been normal on the right since the 10th, the temperature sense being the last to get right: on the left "pins and needles" were occasionally felt till the 18th, and practically no motor difference between the two legs, but the right arm remains a little weaker than the left, though able to perform all ordinary movements. The face and tongue have improved less than the limbs, though it is now difficult to perceive any paresis of the face when at rest. There has been no dorsiflexion of the right hallux since the 16th. The increased reflexes and the cloni on the right side ceased on the 22nd.

You will notice in this account that sensory changes were almost as marked as motor, but that recovery from them was speedier and more complete. You sometimes ask me why in cases of old cerebral hemiplegia the changes are only motor; in such cases, for example, as come before us in the out-patient room. My answer has been that in some, such changes still exist, and may be found if carefully sought for. If you question your hemiplegic he will often tell you he is himself conscious of such changes, though he has long ago got used to them; occasionally, if his work be light and delicate, he will even come to you making these his chief trouble rather than his motor deficiency.

It is not, then, that sensory changes do not exist, but that they attract the attention both of ourselves and of the patients

to a less degree than motor ones : they also pass off sooner, and are probably never so marked ; and lastly, we must remember that the severer cases of apoplexy do not recover, and are usually never in a condition to make any accurate sensory observations upon.

It is often said that sensation is not affected because the path of its fibres lies at the extreme end of the posterior limb of the internal capsule, and that this end of the posterior limb is not so subject to injury as its anterior part or the genu, as seems to be shown by the greater paralysis of the face and arm than of the leg, but in the case before us there was very little motor affection of the leg, yet considerable disturbance of all forms of sensation. Such a case suggests to us that the sensory fibres may not be confined to the extreme end of the posterior limb, but that they travel up in various parts of it just as the motor fibres travel down.

Diagnosis.—There seems to be little doubt that this patient had some lesion of the lenticulo-optic artery, which supplies the posterior limb of the internal capsule and lenticulate body. The lesion would appear to be considerable in extent but of small intensity, occupying the genu and the whole of the posterior limb, affecting the genu and front half of the posterior limb most, but no part severely. Such a lesion does not suggest hæmorrhage, for this nearly always means destruction of tissue if of large extent.

Ordinary thrombosis is usually an accident of old age, due in great measure to enfeebled circulation : the block is complete and rarely temporary, the conditions leading to it being permanent ones. Our patient is only 36, and his heart is strong and healthy, in fact, his constitutional state strikes one as the opposite of that which leads to thrombosis.

What then is this man suffering from ? What injury has been inflicted on his brain ?

Dr. James Taylor, in *Allbutt's System*, says : "Given a patient under 40, in whom there is no evidence of cardiac or renal disease, or any other condition likely to give rise to blocking or

rupture of vessels, we are justified, even in the absence of any confirmatory history, in assuming, for purposes of treatment at least, that the condition is the result of syphilitic arterial disease."

Our patient falls well within the required conditions of this dictum, indeed, we can go further, for his history of specific disease is strong, as he tells us that he has had gonorrhœa, and that the hole in his soft palate is the result of a sore throat eighteen years ago. Most probably then the branches of his left lenticulo-optic artery have undergone syphilitic degeneration to such an extent that in one the blood flow became so impeded that a thrombus resulted; this upset the circulation of the part and other twigs became similarly affected. As he lay quietly in hospital the steady healthy blood supply has re-established part of the circulation which was nowhere entirely cut off and, moreover, the opposite half of the brain has assisted its damaged brother in performing associated movements.

Prognosis.—Syphilitic arterial disease is often very local in its incidence. There is therefore no need to forecast similar accidents elsewhere in the brain, but the artery now affected is likely to suffer again, for drugs do not seem to have much effect upon its regeneration.

The other cases have had a fatal ending, so that we have the opportunity of correcting our diagnosis by the help of a *post-mortem* examination.

Case 2.—Thomas G., æt. 61, window cleaner, was found at the bottom of a ladder by a policeman, at 5 p.m., on April 21st, conscious, but unable to rise. He said he was not hurt and did not know why he fell. His speech was thick and difficult to understand.

On admission there was some paralysis of the right arm and right leg and also, to a slight extent, of the lower half of the right face. The knee-jerk on the right was slightly more active than on the left. The pupils were equal and reacted to light and accommodation. The pulse was long, slow and irregular, but the tension was not high, though the arteries were thickened

and tortuous. The heart's apex beat was a little displaced to the left, being half an inch within the nipple line. The urine analysis was 1,025, some albumen, urea 2·5 per cent.

In three hours he was unconscious, remaining so with deepening coma for four days when he died. His temperature on admission was 96·6° and ran steadily up to 103° at death. His pulse and respiration also steadily increased from 52 and 26 to 130 and 68. Six hours after admission voluntary movements were made with left arm and leg, but not on the right side, though on the right passive movements were actively resisted. Both knee-jerks were equally exaggerated, as also were the plantar reflexes with dorsiflexion of the big toe on the right, and of the whole foot on the left. Rigidity of all four limbs was fast coming on. The right pupil was larger than the left; both reacted very slightly and sluggishly to light.

April 23rd. The knee-jerks are difficult to obtain, though the plantar reflexes are still lively. The pupils are equal, small and fixed. The left leg is still moved, but not the left arm.

April 24th. Cheyne-Stokes breathing. Less rigidity of limbs; reflexes as before; pupils unchanged; all voluntary movement has ceased. There is conjugate deviation of eyes to the right.

April 25th. 2.30 p.m. He died.

Diagnosis.—Cerebral hæmorrhage: locality doubtful: probably into the pons, chiefly on its left side. This diagnosis was wrong, but the following indications influenced us in making it:—(a) The rapid rise of temperature pointed to a lesion of a severe and dangerous type, and practically limited its locality to the basal ganglia, pons, or medulla. (b) Hæmorrhage into the medulla is rare, very quickly fatal and is usually accompanied by paralyses of cerebral nerves; but none such were detected during the three hours of consciousness, nor afterwards. (c) The absence of complete paralysis of the right side and the considerable involvement of the left; in hæmorrhage into the cerebrum or basal ganglia only one side is affected unless the lesion be a large one and then the paralysis of that side is complete, while the other is only slightly affected. (d) In coma the pupils usually are greatly dilated and

equal, but here they became small and the right larger than the left. (e) In large hæmorrhages into the basal ganglia it is unusual to get any recovery from the initial insensibility; and certainly not for so long, nor of such a complete character, as in this case. Yet our diagnosis was wrong, the hæmorrhage had destroyed most of the left optic thalamus and posterior limb of the internal capsule, and had burst into the lateral ventricle and found its way to some extent into the right lateral ventricle and fourth ventricle. The destruction of the thalamus should have caused hemi-anæsthesia and hemiopia, but the speedy inset of unconsciousness prevented our determining the existence of these conditions, and I still think, judging by the signs and symptoms we discovered, that the chances were in favour of the hæmorrhage being pontine.

Our *prognosis* was unfavourable after the first day, because of the rapid rise of temperature, because of the onset of insensibility and, chiefly, because we thought there was renal disease, though the evidence of this last was not conclusive during life; but after death the left ventricle of the heart was found to be much hypertrophied, and the kidneys distinctly, though only moderately, granular in character.

Case 3.—John S., æt. 52, labourer, admitted under my care on March 19th, complaining of loss of power in his legs. Whilst out for a stroll after tea he suddenly felt giddy, and clung to a lamp-post for support: after remaining so for several minutes he tried to walk home, but his legs felt weak and stiff, and he had to be assisted. On reaching home his speech was so changed that he was with difficulty understood. He was then brought to the hospital.

On admission he could answer questions intelligently, he could barely walk and his gait was spastic. Knee-jerks and plantar reflexes were much increased on both sides with marked ankle-clonus and dorsiflexion of both big toes. Arms and face not affected. Pupils moderately contracted, equal, and reacted normally. He was a stout, bull-necked man, said he had had syphilis, but was only a moderate drinker.

Soon after admission he grew much worse, vomited, and in an hour was comatose. The mouth was now slightly drawn to the left, the legs were much more rigid, and no ankleclonus was obtainable. Both arms were moved, but the left less than the right, the left also was somewhat rigid.

The heart's apex was $\frac{1}{4}$ of an inch external to the nipple line in the fifth space; there was a soft systolic apical murmur conducted to the axilla: the arteries were much thickened, the liver reached $1\frac{1}{2}$ inches below the ribs, and its edge was hard and irregular. The bladder reached 2 inches above the pubes. As the coma deepened the pupils became more contracted and the rigidity of the limbs increased, otherwise the condition remained unchanged till his death at 6 p.m., on March 21st.

The temperature rapidly and steadily rose from 96° on admission to 103.4° at death.

The urine analysis was 1,023, very faint haze of albumen, 2.5 per cent. urea, nothing abnormal seen under the microscope.

Diagnosis.—Large hæmorrhage into the pons.

The fact that, notwithstanding the deepening coma which dilates the pupils, there was increasing pupillary contraction was strongly in favour of a lesion of the pons.

Again, the *equal* affection of both legs at first, though neither was paralysed, but only gave signs of irritation, showing that the hæmorrhage was not a large one at that time, and that therefore the involvement of the other limb from shock, owing to the sympathy of associated movement, should have been slight or absent, if the lesion had been in the region of the basal ganglia.

Lastly, the absence of unconsciousness at first again proved the hæmorrhage to have been very small at that time, and as, nevertheless, it caused definite organic signs (*e.g.*, dorsiflexion of both toes), this smallness pointed to the pons, where a small area of lesion can do so much mischief.

Prognosis.—Unfavourable. There was little doubt of this owing to the locality of the hæmorrhage, the rapid onset of coma and pyrexia, with the steady increase of both. The condition of

the kidneys, though very suspicious, was not certain, as the enlargement of the heart might have been owing to mitral disease, the impulse not being of the hypertrophic nature characteristic of renal disease, whilst the condition of the urine was consistent with health.

At the *post-mortem*, a section through the middle of the pons showed a hæmorrhage, most marked on the left side. It measured one inch from left to right, destroyed the transverse fibres and pressed up into the fillet fibres: it was deep, there being $\frac{7}{8}$ of an inch between it and the surface of the pons, hence the motor fibres would appear to have largely escaped. The pons, as a whole, was $1\frac{5}{8}$ of an inch through on the left side, but only $1\frac{3}{8}$ on the right.

The aortic and mitral valves were thickened, both ventricles were dilated, and the heart weighed 17 ounces. The liver was of the typical hobnailed type with a large amount of cirrhosis. It was increased both in size and weight (4 lbs.) as usually happens in cirrhotic livers. The kidney capsules were adherent, their removal tearing the substance; the cortices were of normal thickness and each organ weighed 6 ounces.

Case 4.—Harry R., æt. 52, zincworker, was admitted comatose under the care of Dr. Carter, to whose kindness I am indebted for permission to relate this case to you, as well as to Dr. Stanley for the notes both clinical and pathological. The clinical notes are necessarily very brief, as the patient died a few hours after his admission on May 6th.

Both arms, when lifted, fell dead: both legs were rigid and showed coarse tremor. There was slight conjugate deviation of eyes and head to the left. The right pupil was larger than the left, but neither was very small. The knee-jerks were increased, the right a little more than the left. The tremor went from the right leg and its rigidity decreased. There was doubtful pharyngeal paresis. The temperature was $101\cdot4^{\circ}$.

Diagnosis was one of hæmorrhage into the pons, though the coma made it impossible to estimate the paralysis. The disappearance of tremor in the right leg and the decrease in its

rigidity, indicating a change from irritation to paralysis, pointed to a left-sided lesion, as did also the deviation of the head and eyes to the left. On the other hand, a hæmorrhage into the basal ganglia to produce such temperature and coma must have been a large one, and with a large hæmorrhage there is usually flaccidity from the first; moreover, one side is but slightly affected. However, these things are not always so, as is well exemplified in case 2, where rigidity remained almost to the end, and both sides of the body were considerably and not so very unequally involved.

Prognosis was naturally unfavourable. *Post-mortem*, a large hæmorrhage was found, affecting chiefly the right side of the pons, but involving the greater part of it and extending into the motor tracts. The heart's left ventricle was one inch in thickness, and both mitral and aortic valves were thick and rough. The kidneys only weighed $\frac{3}{4}$ ounce each and were of the typical red granular type.

Case 5.—This is not only the rarest, but the most interesting and instructive of the lesions I have to relate to you. John L., æt. 59, excavator's labourer, was admitted under me on April 26th. His family history was good; he had had gonorrhœa forty years ago, winter cough every winter for some years, and "erysipelas in his legs thirty-four times." Otherwise his previous history was very good, and he had the appearance of a clean-living man of tough constitution.

At breakfast on April 14th, he found he could not swallow solid food, and fluids partly regurgitated through the nostrils. In all other respects he remained well, taking only fluid food till the evening of April 24th, when he noticed slight weakness in his left leg with some hoarseness, and when he placed his hand in hot water it felt cold. On April 25th these symptoms increased; he could only walk with a stick. On admission he lay on his back and an occasional slight fit of coughing would turn his face purplish. His voice was thick and husky, but his intellect quite clear and reasonable.

The sense of touch was blunted in the left arm and to a less

extent in the left leg; both legs felt as if they had "gone to sleep." The sense of pain was almost absent in the left arm and much blunted in the left leg. Left abdominal wall was also slightly blunted to pain. The left grasp was feebler than right; the left arm and hand were sluggish and fumbling in performing co-ordinated movements. The left knee-jerk was exaggerated, there was dorsiflexion of first and second toes on *both* sides, but the contraction of the calf muscles and tensor vaginæ femoris was much more active on right. Wrist, triceps and jaw-jerks were absent on both sides. Both pupils were small and reacted very feebly to light and accommodation, but the right was much smaller than the left. The tongue was protruded and withdrawn straight, the left pillar of the fauces and left wall of the pharynx were bulging flaccidly. The heart's apex was half-an-inch external to the V. N. L. in the 5th space; its impulse rather feeble; pulsation in epigastrium and external jugulars. The arteries were thickened and the radial pulse full, low in tension and regular. The lungs were emphysematous and chest barrel-shaped.

April 27th. Ptosis of right upper lid, and paresis of right internal rectus were present. Pupils small, equal and fixed. Tongue protruded to the left; no facial paresis observed. Hearing a little dulled—watch heard 18 inches on left and 24 inches on right. More paralysis of the left arm; he could not move his fingers nor wrist, and his elbow and shoulder only very feebly. Tactile sense was good, but both pain and stereognostic impaired.

April 28th. Laryngeal cords were noted as moving well. There was some paresis of right palate. Hot and cold water were both recognised as warm over the whole left side except the face. Taste and smell were found to be both impaired for some substances but not for others. The left knee-jerk could not now be obtained, but on the right the reaction was increased. The dorsiflexion of the hallux was more marked on the left, the contraction of thigh and calf-muscles on the right. The left ankle

was rigid and the movements of the whole limb were impaired. Fluids tended to regurgitate through the nose.

April 29th. Ptosis was greater, swallowing more difficult. Paralysis of left forearm and fingers was complete. Right side of the face seemed the weaker. Right internal rectus was weak: pupils were very small, the right smaller than left; reactions sluggish. Could hear watch about 8 inches away from each ear, but could not hear when placed on scalp and ears closed.

Hot and cold things were equally pronounced warm throughout left side below the clavicle: the stereognostic sense was also impaired on that side. On May 1st the motor and sensory changes were much the same, but pneumonia now developed. There had evidently been great acute general emaciation: the face especially looking pinched and sunken. He died on May 5th.

Diagnosis.—The numerous affections of cerebral nerves pointed to the upper part of the medulla as the locality of the lesion: it was evident, too, that the greater part of the lesion was on the right side.

What was the nature of the lesion? The varying intensity of its signs, their creeping character, and the complete retention of consciousness put cerebral hæmorrhage out of court. The temperature, moreover, was not that we are accustomed to see in fatal cerebral hæmorrhages; it ran up at first from 97° to 102° , but failed to continue this upward movement, maintaining during the remainder of his life a position which varied each day between 99° and 101.5° . It was, indeed, a remittent fever and pointed strongly to some germinal action; and this was the diagnosis which on the whole seemed to me most probable. The next likeliest seemed to be tumour, but the march of events was too rapid; there was no vomiting nor giddiness and, moreover, tumour does not in itself cause temperature. At first, bulbar palsy crossed my mind, but a second visit showed the impossibility of this: the condition was far too acute and the affection of the limbs far too great. This affection of the limbs was evidence of a deep coarse lesion, and hence put on

one side all superficial inflammations, such as are most of those due to germal action. Acute softening was discussed, and it would best have explained the signs; but acute softening accompanied with considerable fever must almost of necessity be germal, *i.e.*, septic in origin. Such septic softening or destruction was my final conclusion.

At the *post-mortem*, the upper part of the right pyramid of the medulla appeared enlarged; on section, an irregular wedge penetrated from the surface for an eighth of an inch into the substance of the pons; this looked something like sclerosis, but had a more vitreous texture; deep to this was a focus of softening. More than this, I cannot tell you now, as it is not yet sufficiently prepared for Dr. Stanley to examine microscopically. I expect we shall find that it is an acute inflammatory infiltration, resembling the cloudy swelling which we see in other organs, part of which has softened to what is practically an abscess.

Prognosis.—Where the diagnosis is uncertain, the prognosis must necessarily be so also. But that so widespread a medullary lesion, producing a temperature of such marked inflammatory type, must of necessity be very dangerous was evident, and though we could not tell the duration of life in days, yet we felt there was little hope of recovery. The onset of septic pneumonia at once told us that the prolongation of life could be for two or three days only.

ON THE THERAPEUTIC EFFECTS OF LIGHT AND THE X-RAYS.

BY J. HALL-EDWARDS, L.R.C.P.,
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IT is only within the last few years that the therapeutic effects of light have received any serious attention at the hands of surgeons. Quite recently the Röntgen Rays have been discovered, and there can be but little doubt, that the extraordinary properties of these, have to a great extent instigated investigators to increase their efforts in the direction of the application of light for therapeutic purposes. It is my intention, in this short paper to lay before you a brief account of these researches up to date, and I shall hope to prove that although our knowledge of the subject is extremely limited, we have at hand an undeniable amount of evidence of the value of various rays in therapeutics. During the last half century much has been written on the therapeutic and pathological effects of light upon the tissues; but it was not until Dr. Niesl Finsen of Copenhagen took the subject in hand that any real progress was made. As the outcome of the researches of this able investigator, it has been proved (beyond the power of contradiction) that in the chemical rays contained in light, we have a therapeutic agent of considerable value. Moreover, his genius has enabled him to practically apply his knowledge with such good effect, that his light treatment has now gained an acknowledged place amongst our most valued remedial agencies. The "Finsen" treatment (as at first introduced) had many drawbacks, not the least important being its expense, and the time occupied in its successful application.

The apparatus designed in Copenhagen, and which was first

introduced into this country at the London Hospital, consisted of a very powerful Electric Arc Lamp of some 10,000 candle power capacity, which consumed 75 ampères of current, at a pressure of 60 volts. The light, after being filtered through heat-absorbing media, was focussed upon the parts by means of a telescopic arrangement, some three feet in length; four such arrangements being placed round each arc lamp. The whole apparatus costs something like £1,000, and its working entails an expenditure of £200 per annum.

In order to produce the maximum effect at so great a distance from the source of light, it is necessary that the light rays should be brought to a focus, and thus a very limited area of the diseased surface can be treated at a time, and the length of the sitting is about an hour.

In severe cases, as many as 200 applications were necessary to produce any marked result, a very trying ordeal for the patients. The applications entail a large amount of inconvenience, and whilst, if properly carried out, they are nearly painless, they are, if successful, followed by a reaction, which is not so. From this description it may be gathered that only in a few cases can the patients stand the strain imposed upon them by the treatment.

Recently lamps have been introduced in which the arc is placed closed to the rock-crystal lens. They have the advantage of consuming only one quarter the amount of current required by the original lamps, cost but a few pounds, the area treated at each application is much larger, and the length of exposure is reduced to from ten to twenty minutes.

There are several patterns of such lamps upon the market, perhaps the best known being "The London Hospital Lamp." In these lamps, the heat rays from the arc are cut off by means of a screen through which water is circulated: in the centre of the screen is a projecting lens of rock-crystal through which water also circulates.

The rock-crystal lenses vary from one to two inches in diameter, and the part to be treated is pressed against them.

Should the area it is wished to treat be less than the diameter of the lens, the surrounding parts are protected by some opaque material. Thick black paper answers very well. It is necessary for the effective action of the light rays, that the part exposed to their action should be rendered as bloodless as possible, hence the necessity for compression.

In this class of lamp the compression is brought about by pressing the part against the rock-crystal lens in the front of the instrument. In the original "Finsen" lamps the compression was brought about by a specially devised compressor, through which water circulated.

It is my pleasure to introduce to your notice (for the first time) a Lupus lamp of novel construction in which the advantages of the new and old methods are combined.

The lamp is known as the "Cox Lupus Lamp," "Heathcote Patent." It is (Fig. 1) self-enclosed, and the great novelty consists in the fact that the carbons are kept cool by means of water jackets to within an eighth of an inch of the actual arc. The advantages of this arrangement are :—

1. That the carbons being kept cool offer but a very small resistance to the passage of the electrical current, hence a more brilliant light is obtained.
2. That the heat produced is reduced to a minimum.
3. Small carbons can be used.
4. Owing to the small amount of heat generated, a condensing lens can be placed within half an inch of the source of light without any great risk.

The whole arrangement is kept cool by means of a stream of water, very little of which is required for the purpose, one pint per minute being amply sufficient.

In addition to the condensing lens the instrument is furnished with a separate rock-crystal lens mounted in a sliding metal tube, which enables the light to be brought to a focus within three or four inches of the lamp. It will thus be seen that this lamp may be used after the manner of the "Lortet-Genoud" or "London Hospital" lamp, whilst at the same time it retains the

advantages of the original "Finsen." If the light be used at its focus, a compressor must of course be used, and the time of exposure must be considerably lengthened.

The special compressor supplied with the instrument can be inserted into the current of water used to keep the lamp cool, and it is so arranged that the water circulates through the compressor before entering the lamp itself. It is thus kept beautifully cool. The water may be supplied from a zinc tank which can be fixed to the wall above the lamp, or from a tap in the usual manner.

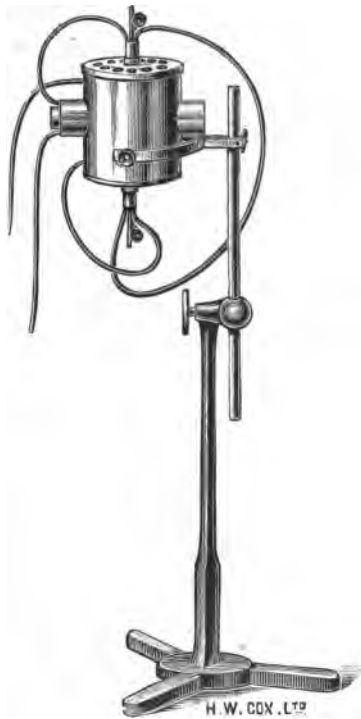


FIG. 1.
"THE COX LUPUS LAMP."
(Heathcote Patent.)

The stand is firm, and rigid, and will allow of the lamp being fixed in any desired position.

A recent visit to the London hospital has convinced me that in certain cases, the original Finsen treatment has distinct advantages; this lamp is therefore doubly worthy of notice, as either method of treatment can be adopted at will.

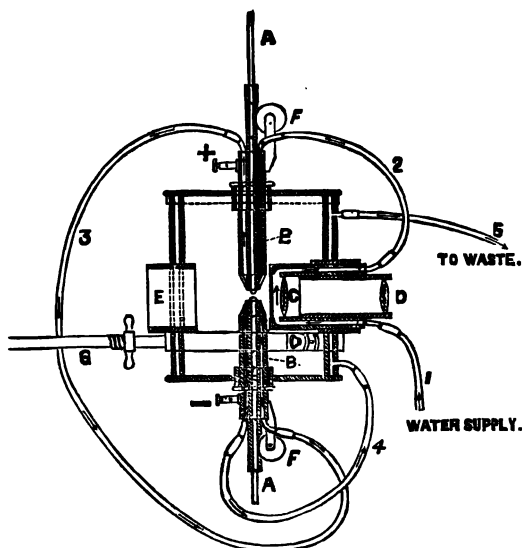


FIG. 2.

SECTIONAL VIEW OF "THE COX LUPUS LAMP."
(Heathcote Patent.)

A, A. Carbons. B, B. Water jackets for keeping carbons cool. C. Condensing lens, through which water circulates. D. Front lens in sliding tube, for bringing light to focus, or against which the part may be compressed. E. Tube supplied with coloured glasses for viewing arc; or for holding a second condensing lens. F, F. Thumb-screws for regulating carbons. G. Arm for connecting lamp with stand. + — Binding screws for connecting electric current. The arrows, and figures, indicate the manner in which the water circulates. When a compressor is used it is inserted into the current between the source of supply and 1.

In actual practice the lamp has in my hands proved a complete success, and I venture to think that with slight modifications it will be a perfect instrument. It has been pointed out that the light rays produced by an electric arc passing between iron, or other metal poles, are much more rich in chemical rays than those produced by carbon conductors, and I

am at present engaged in experiments with the intention of proving this theory.

The advantages offered by the new form of lamp have led many to take up the light treatment, who would not have done so under the older conditions.

There can be no gainsaying the fact, that at any rate in lupus and rodent ulcer, the results produced by the light and X-ray treatment are far more successful than those obtained by any other method. The only question which has yet to be answered is that of permanency, a question which must wait for years for its satisfactory solution. I have recently seen a case of lupus, which to all outside appearances, was cured by injections of tuberculine; but on examining the patient I noted the fact that all the lymphatic glands in the neighbourhood were very much enlarged and indurated, and I cannot help thinking that in this case the *locale* of the disease has only been changed.

I have not noticed any changes in the lymphatic glands, in any case which has come under my notice, after either light or X-ray treatment.

The advantages of light treatment with the modified lamp are:—

1. The shortness of the necessary exposure.
2. The increased area treated at each operation.
3. The ease with which the instruments can be manipulated.
4. The diminished cost of the treatment.
5. The lessening of its total duration.
6. The reaction, which necessarily follows a successful application, covers a larger area, and the total pain bearing period is thus considerably shortened.

At the discussion upon these new methods of treatment which took place at the Dermatological Section of the British Medical Association, at Cheltenham, several cases of lupus which had been treated by the "Finsen" light were exhibited, and I was rather surprised to find on questioning the patients, that the X-rays had been also used in each case.

Up to quite recently my knowledge of the treatment of lupus,

rodent ulcer, etc., was confined to the application of the X-rays and high tension electrical currents, and I must admit that even now, in my hands, the X-rays produce the best results.

Quite recently a new source of ultra violet or chemical rays has been introduced, and a lamp has been devised which promises to be exceedingly useful. In this lamp (Fig. 3) the light emanates from a rapidly oscillating spark which passes between two metal points. For generating the spark any source of high tension electricity may be used to charge a condenser, or Leyden jars, in parallel with the metal points before mentioned, which should be kept about one-eighth of an inch apart. The condenser discharges across the gap with oscillations at the rate of hundreds of thousands per second, giving out a small amount of visible light, and an abundance of ultra-violet and violet rays. When an alternating current is available, a step-up transformer

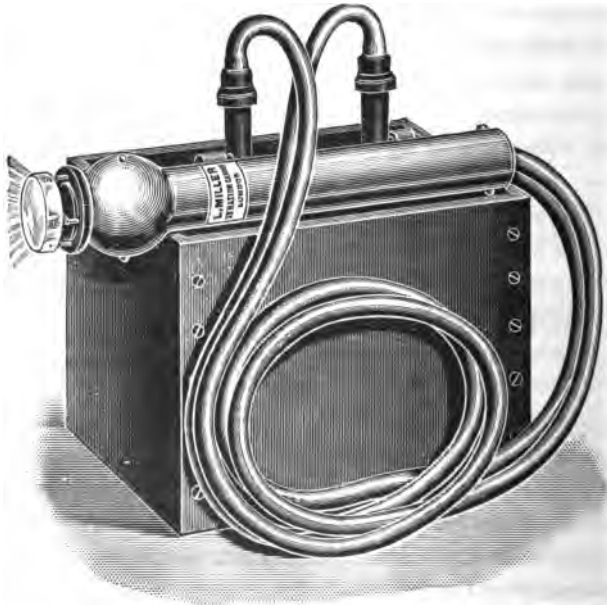


FIG. 3.
INDUCTION COIL ULTRA-VIOLET LAMP.
(The St. Bartholomew's Hospital Lupus Lamp.)

should be used to charge the condenser, but if not, an ordinary induction coil may be used, with a motor mercury break.

The lamp is contained in the end of a long tube, which is connected to the condenser by insulated conductors. The rays are passed through a rock-crystal lens, or a piece of ice, which is used as a compressor. Quite recently it has been suggested that a lens of rock-salt may be use with advantage. The great drawback to the use of this lamp is the noise which is caused by the rapid passing of the sparks between the metal points. From the fluorescent effects produced by this lamp, there can be no doubt of the abundance of invisible rays given out; and if the therapeutic effects of the other forms of light treatment are due to the presence of invisible rays, this source of light should prove of great use. I have previously pointed out that if the light treatment of lupus is to be successful, it is an absolute necessity that the parts exposed to the rays should be rendered as bloodless as possible by compression. In certain situations this is a matter of great difficulty, and in some it is at present impossible. Certain devices have already been suggested to overcome these difficulties, and I have little doubt that in the near future we shall so modify our methods, that even the most difficult cases can be successfully dealt with.

Early in the history of the application of the Röntgen rays to practical surgery, it was discovered that prolonged exposure at a short distance from a highly charged Crooke's, or Lenard tube, produced injurious effects upon the human tissue; and that the skin and occasionally the deep structures were destroyed, or seriously injured. Certain observers came forward who spoke of beneficial effects; some no doubt largely due to imagination, and others to a combination of circumstances, of which the X-rays played only a small part.

The first paper of importance pointing out the dangers produced by the unscientific application of the X-rays was written by Nikola Tesla, the famous New York electrician; who not only described the ill-effects which followed prolonged exposure

at a short distance from a highly charged Crooke's tube; but described methods whereby these ill-effects could be avoided. The effects produced upon the skin and nails of the hands of constant experimenters proved, beyond all doubt, that some physiological action was taking place; and from numerous accidents which have been reported from time to time in the Medical Journals, it is absolutely certain that in the ignorant application of the X-rays, we have a danger which renders it necessary that their use should be restricted to skilled hands. During the six years I have been engaged in the practical application of X-rays to Medicine, and Surgery, I have only had one case in which deleterious effects were produced by such an exposure as is necessary to produce a negative for the purposes of diagnosis. This occurred in the case of an officer, who was sent to me, whilst in South Africa, for the purpose of localising a bullet, which had lodged in his spinal column. Two exposures were given, each of twenty minutes' duration, the tube being placed at a distance of eleven inches from the skin. The lengthy exposure here given was rendered necessary by the fact that the amount of the electrical current at my disposal was extremely small.

Two days after the exposure, my attention was drawn to a slight dermatitis over the lower part of the chest, and upper part of the abdomen, accompanied by slight pain and burning. The application of an evaporating lead lotion allayed all symptoms in twenty-four hours. I attribute the accidental production of dermatitis in this case, to the lowered vitality of the patient, consequent upon a severe injury to the spinal cord, accompanied by paralysis of the lower limbs and sphincters. Recent improvements in apparatus have rendered the time of exposure, which is necessary for the production of a radiograph, so short; that in skilled hands, we should hear no more of the accidental production of X-ray burns.

Under the conditions which now exist, an exposure through the thickest part of the body should not occupy more than three minutes, and moreover, the tube can be

placed further from the body than was formerly the case. The fact that the skin could be destroyed by prolonged exposure at a short distance from an X-ray tube, together with the knowledge that protection could be afforded to parts which there was no reason to effect, early led experimenters to try the effects on certain diseases of the skin, where destruction of the tissues by cautery, or caustics, or removal by operation, had hitherto been resorted to.

During the experiments in this direction it was found that, in certain cases, a beneficial effect was produced before the application had gone sufficiently far to result in actual destruction of tissue, and the effect of a series of fairly lengthy exposures, at what is known as a safe distance from the tube, produced results in cases of lupus and rodent ulcer, which pointed to a field of usefulness for the new method.

From all parts of the world have come in news of cures brought about by continued short exposures to the X-rays, and there can be little doubt that with increased knowledge we have at hand a therapeutic agent of considerable value. Cases of lupus, rodent ulcer, eczema, ringworm, favus, sycosis, psoriasis, elephantiasis, lepra, nævus, acne, etc. etc., together with chronic ulcers, have been treated with good effect, and latterly certain forms of cancer have been materially benefited by X-ray treatment.

There are many points in such treatment which call for attention, the chief being the kind of tube which is best adapted for therapeutic purposes. By the kind of tube I do not refer to the particular pattern, but rather to the condition of vacuum which is best suited to our purpose.

Tubes have been divided into three classes—soft, medium, and hard, the terms having relation to the degree of vacuum. A tube in constant use rapidly passes from one condition to another, but it has been pointed out by many observers that a soft tube is much more likely to produce dermatitis than either of the others.

A soft tube is one in which the violet cathode rays can be

seen passing between the cathode and anti-cathode, and which shows the bones of the hand black upon the screen.

A medium tube is one in which no violet cathode rays can be seen, and which renders the bones transparent.

A hard tube can only be excited with difficulty, and frequently has to be heated before a spark can be made to pass through it. This last is by far the best for therapeutic purposes; and it is also by far the most difficult to deal with successfully.

In a paper which I read before the British Medical Association at the annual meeting at Portsmouth in 1899, I stated that, in my opinion, the effects produced were largely due to the near presence of an electrical current of high potential; and although I drew attention to the fact that, sooner or later, I might have to modify those views, I am still of opinion that electrostatic, or electrolytic action plays some part in the production of the results.

It is exceedingly difficult to isolate the purely X-ray from the electrical effects, and much time must elapse before we are in a position to say what part each plays in the therapeutic effects produced. We have at hand ample evidence that the fine streamers which proceed from an "Oudins Resonator" have in themselves marked therapeutic effects; and although I have some evidence that the X-rays of themselves have similar properties, it is at present impossible scientifically to separate the one set of phenomena from the other. There are many points in the actual application of the X-rays to therapeutics which call for attention, not the least important being the best means of protecting the surrounding parts from the action of the rays. In my early experiments, when I worked with the intention of producing an actual X-ray burn, I adopted the plan of painting over the surrounding parts with a thick layer of either iodoform or bismuth, suspended in gelatine. (*Edinburgh Medical Journal*).

In these cases, one to three exposures, at a distance of one inch from a highly charged Crooke's tube produced the desired result; and the method adopted for protecting the healthy tissues

proved highly satisfactory. With the continued treatment, such a method of protecting the healthy tissues involves far too much trouble, and screens or masks, covered with some more or less opaque substances, are now generally used. A hole is cut in the screen or mask, which allows the rays only access to the parts it is desired to treat. Tinfoil and sheet lead are the substances most commonly used, but I have found that dermatitis much more commonly follows the use of such screens than with those which, although less opaque, are non-conductors of electricity; and I cannot help thinking that as the metal covered screens become secondary condensers; which during the action of the tube are highly charged with electricity, they are apt to produce unlooked for results. If any portion of such a metal screen touches the skin a burning sensation is felt, and if continued for any length of time a dermatitis usually follows. I have obviated such a danger by enclosing the metal shield between two sheets of cardboard, or other non-conducting material; but screens made of gutta-percha, india-rubber, cardboard, or thin wood, painted with a thick layer of bismuth, or oxide of lead, have proved even more satisfactory. Masks have an advantage over screens, as they can be fixed to the parts, and obviate the tiresomeness of their having to be held in position.

The latest method I have adopted, and one which appears to have many and great advantages, is to enclose my tube in a box lined with some opaque substance, leaving only a hole in the front through which the rays can pass. This hole is preferably made circular, and is so arranged that tubes of varying length, made of vulcanite or cardboard, can be fixed in them as desired. The tubes themselves are also lined with opaque material to within a quarter of an inch of their free ends. The advantages of this method are that the patient can hold the part it is wished to expose to the rays to the end of the tube, without any fear of getting too close, and diaphragms of varying size can be used over the end of the tube to protect the surrounding healthy skin.

I have devised an apparatus (Fig. 4) for holding such enclosed tubes in position for therapeutic purposes, or it can be

utilised for taking radiographs. Negatives produced in this manner are much more sharp than those taken by the ordinary methods.

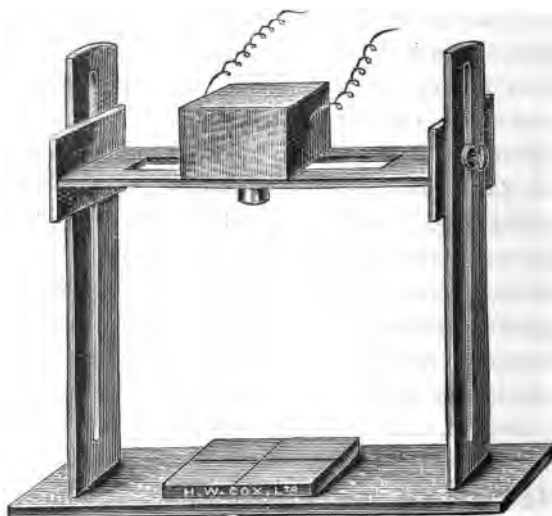


FIG. 4.

THE "HALL-EDWARDS" THERAPEUTIC, LOCALISING,
AND STEREOSCOPIC, X-RAY TUBE HOLDING STAND.

The box containing the tube is square, and is held in position upon the stand by runners. The tube can (by altering the position of the box) be pointed in any desired direction, as the necessities of the case under treatment may require.

In later experiments, I have packed my tube in the box with a non-conducting, opaque material, which appears to yield even better results. I shall hope, however, to be able to say more on this point later on.

I have not the slightest hesitation in saying that the results obtained by these methods are much more satisfactory, and the freedom from risk of producing an accidental dermatitis is a great relief to the surgeon.

There is a similarity in the effects produced alike by the light treatment and the X-rays, to which I should like to draw your attention. This is the production of pigmentation. This

naturally differs in different individuals ; but it is rarely entirely absent in any case, which is being benefited by either method of treatment, and I always look upon its production as a favourable sign.

Patients differ to a very marked degree in their susceptibility to the influence of the X-rays ; and it is necessary at first to proceed with great caution, if disastrous results are to be avoided. One application of ten minutes' duration, at a distance of eight inches from the tube, may produce a dermatitis in one case ; whilst in another, six or eight applications may be administered under exactly the same conditions without producing any recognisable effect.

Albers Schönberg, who has successfully treated a large number of cases of lupus with the X-rays, lays great stress upon the undesirability of setting up a dermatitis. He disapproves of using heavy currents, and points out that in his experience no beneficial effect is produced on lupus of the nasal mucous membrane. In this latter contention I agree with him ; at the same time, I should like to point out that some of my best results have been obtained in cases in which the mucous membrane of the lips was affected.

I disagree with him entirely as to the effects of setting up a limited amount of dermatitis in cases of lupus. In these cases the dermatitis produced differs considerably from that produced accidentally upon healthy skin. It quickly heals, and the ulceration is superficial. Taking into consideration the older, and more or less successful methods of treating lupus, such treatment would certainly not be taken as being unscientific, and I see no reason why a limited amount should not be purposely produced. Indeed, in cases in which there is one small or medium sized patch, situated anywhere but upon the face, I have no hesitation in destroying the whole area at one exposure, of from fifteen to twenty minutes, at a distance from one to two inches from the tube. In my first experiments some four years ago, I produced in each instance an extensive X-ray burn by giving two or three such exposures, the distance between the skin and the tube

being only one inch. The ulcers formed took months to heal, and although the final results were good, I should not advise such treatment in any but exceptional cases. In certain forms of superficial cancer, such treatment might possibly prove beneficial.

As regards lupus and rodent ulcer, there can be little doubt that in the X-rays we have a therapeutic agent of considerable value, and whilst I would not (at present) go so far as to state that all other methods of treating these diseases should be abandoned, I feel certain that in conjunction with the already accepted methods, it will be proved that these troublesome diseases have lost some of their terrors. The scar tissue which follows the successful treatment of lupus by the X-rays is soft, pliable, and natural in colour. There is no contraction, no loss of tissue, and the pigmentation produced, disappears in the course of time. Whether or not, the results produced are permanent, yet remains to be proved; but even granting that they are not, the relief obtained is far greater than that produced by any other method (with the exception of that which follows the light treatment), and as I have before stated every successful case which has been publicly exhibited is the outcome of the two methods combined. Recently it has been stated that the treatment of lupus erythematosus has not been successful. Many cases of cure have been reported from the Continent and America, and some 3½ years ago I treated one with complete success. The disease has not recurred and the patient is now in perfect health.

During my absence in South Africa I had to completely discontinue my experiments; since my return, however, I have treated a large number of cases with varying results. On the whole they are satisfactory, but in a few little response has followed the treatment. This may be due to the non-efficiency of my methods, to the fact that some cases are not in any way effected by the X-rays, or to the treatment not having been sufficiently prolonged.

In describing the phenomena which follows the successful

application of the X-rays, some observers have stated that the healing process always commences in the centre of the patch under treatment, and that the edges are driven out, and are only dealt with, with considerable difficulty. In my hands the opposite result has been obtained. My cases as a general rule commence to heal from the edges of the patches, and whilst a few nodules may remain unaffected, the healing process gradually extends inwards. I attribute the effects described to the using of too small a hole in the screen or mask. My invariable rule is to expose at least a quarter of an inch of healthy (or apparently healthy) skin beyond the defined margin of the patch. Should the screen be smaller than the patch it is obvious that its centre gets more exposure to the rays than its edges, and the result complained of is only what can be expected.

In treating a small patch, the hole in the screen should be larger than the area of the disease, and if it is thought unwise to treat the whole of the diseased surface at once, treatment should be commenced at its edges. It generally happens that one or two isolated nodules remain after the general surface is cured. These are most difficult to deal with, and a change of treatment is indicated. The reason for the escape of these nodules is not forthcoming, but it may be due to their implicating the deeper layers of the skin, which have not been touched by the treatment. It is curious to note that whilst the X-rays pass completely through the parts submitted to them, it is only the superficial surface which is markedly effected. This fact of itself goes to prove that electricity plays no small part in the production of the results, as one would imagine that the whole thickness of the tissues must to an extent be effected, if the X-rays themselves alone are concerned.

The excellent and successful results obtained in the treatment of rodent ulcer by the X-rays point to a well nigh specific action in this particular disease, and inasmuch as it is closely allied to cancer, we had good grounds for hoping that in certain forms of this terrible malady some good results might accrue.

Our predictions in this direction have already proved true,

many cases of cure having already been reported, and in cases in which all hope of cure had been abandoned considerable relief has been afforded. So far, most of the cases in which relief has been obtained are of a superficial character, but we have some evidence that deeply seated lesions are to an extent effected. We have good reason to believe (from experimental evidence to hand) that continued research in this direction will yield even better results than those already obtained, and although we cannot dare to hope that all forms of cancer may be relieved or cured by X-ray treatment, the results secured are sufficiently encouraging to warrant continued research. In several cases which have come under my notice, pain, which could not be relieved by drugs, has disappeared after a few exposures, even in cases in which the disease was so far advanced that all hope of successful treatment had been abandoned.

A large number of cases have recently been published by Dr. Morton of New York. In each, considerable relief was obtained from the treatment. The growths diminished in size, and the pain disappeared.

At the present time there is a considerable difference in the methods adopted by various observers, but all agree that in the X-rays we have a promising therapeutic agent for combating the most fearful diseases known to surgeons. A modification of our methods may bring about better results, and inasmuch as in skilled hands the X-rays can do no harm, there is no reason to justify their application in any case which, in the ordinary condition of things, has been pronounced inoperable.

The application of light and the X-rays to therapeutics is as yet in the experimental stage, and although the results produced are more than satisfactory, it is impossible to lay down any definite rules of procedure. In the near future I hope to lay before you a more complete plan of campaign, and I must impress you with the fact that some of the statements made herein may have to be contradicted; or at any rate materially modified.

REPORTS OF CASES.

A CASE OF FAINTING AND ANOTHER OF VOMITING AFTER OPERATION UNDER ETHYL CHLORIDE NARCOSIS.

BY W. J. MCCARDIE B.A., M.B., B.C., CANTAB.,
ANÆSTHETIST TO THE GENERAL AND DENTAL HOSPITALS,
BIRMINGHAM.

AFTER-EFFECTS from short ethyl chloride narcosis are usually absent altogether, and if present are slight, because elimination from the lungs is very rapid. After administration no traces of the drug can be found in the secretions. Speaking very generally, the sequelæ of narcosis vary as the length of administration, the quantity of the drug used, and the type of patient. The longer administrations are more likely to cause sequelæ, though in my longest case, that of a weak old woman, æt. 60, to whom I gave ethyl chloride for about seventeen minutes, there was no after-effect at all, but immediate and full recovery, and ability to take a meal $1\frac{1}{4}$ hours afterwards. Nausea, vomiting and headache are the commonest after-effects. Nausea generally passes off within an hour while vomiting usually only occurs once or twice. Faintness is very rare. One or two of my patients who had previously had nitrous oxide decidedly preferred ethyl chloride. It is said by one or two foreign observers that the usual after condition is a feeling of well-being and often of hunger. Marshall of Liverpool, in a series of about fifty administrations, records two cases of accusation of indecent assault as the only noteworthy sequelæ.

The only two instances in which I could possibly attribute, out of 55 cases, any serious post-anæsthetic effect to ethyl chloride are the following:—

1. A nervous youth, æt. 17. Removal of adenoids and tonsils. Patient was tall, ruddy, and had a high narrow palatine arch. Nothing abnormal was found in his chest. In $1\frac{1}{2}$ minutes he

went quietly under, *i.e.*, the conjunctival reflex was absent, the pupils were of moderate size, the facial colour was improved, pulse and breathing were regular, the skin sweated slightly and the muscles were lax. The mouth was opened by a Mason's gag, and the operation, which lasted one minute, was done under full anæsthesia, after which the patient recovered consciousness in half a minute. There were no immediate after-effects, and he walked back to bed ten minutes later. In two hours time he insisted on going home to a place eight miles away, and fainted in the cab on his way to the station and again in the train, also defæcating in one of these attacks.

It is difficult in this case to reckon the part played by the anæsthetic in the production of syncope, but I think that it may have had some influence.

2. A delicate nervous girl, æt. 11, who had not had an anæsthetic before. She had been prepared for operation in the usual way. Operation for necrosis of the os calcis. I began the administration in the anæsthetic room and one minute after wheeled the patient into the theatre, keeping her lightly under for the cleansing and first part of the operation, *i.e.* allowing a brisk lid reflex and moderate rigidity of the limbs. The colour was improved, respiration vigorous, and the pupils well contracted. After five minutes I kept up deeper anæsthesia, as shown by very slight or absent lid reflex and lax limbs. The operation lasted nine minutes, and I used altogether 9 c.c. of ethyl chloride, some remaining over on the mask. The child was about one minute in recovering consciousness, and then vomited some mucus. I saw her about half an hour afterwards in the ward and found that she had been vomiting a little fluid; her complaint was of wound pain and sickness. On enquiry next day, I was told that she had been vomiting at frequent intervals for thirty hours, bringing up at once all food that she was given. All attempts to stop the sickness by a mustard leaf over the stomach, hot water, bismuth and soda, failed. At last after taking some albumen water (which is, I understand, the whites of three eggs mixed with a pint of hot water) the vomiting

ceased. The ward sister told me that albumen water often lessens or stops post-anæsthetic sickness, but whether it was a case of *post* or *propter hoc* is not certain. Next morning the child was well and hungry.

I am inclined to think that this nervous delicate child, like others of her sex of similar temperament and unstable digestion, would have been sick after most anæsthetics, though whether so severely as after ethyl chloride, of course, I cannot say.

Since the above notes were written and about seven months after the first operation, the patient had ether preceded by a little chloroform administered for a second operation on the leg, and vomited just as much and for as long as after ethyl chloride. On yet another recent occasion there was severe vomiting after another anæsthetic than nitrous oxide or ethyl chloride. Thus it would seem that in this case at any rate the latter drug did not lead more than others to after vomiting, which I believe was largely due to exceptional nervous or stomachic sensibility.

MEDICAL ABSTRACTS.

BY JAMES MILLER, M.B.,
ASSISTANT LECTURER ON PATHOLOGY IN THE
UNIVERSITY OF BIRMINGHAM.

Chloroma—(Rosenblath and Risel, *Deutsches Archiv für klinische Medizin*, Bd. 72, Heft 1. Byrom Bramwell, *Scottish Medical and Surgical Journal*, March, 1902. Melville Dunlop, *British Medical Journal*, May 3rd, 1902).

This disease is of interest not only from its rarity, only some twenty-seven cases having been recorded, but also from its relation pathologically to lymphosarcoma on the one hand, and to lymphatic leukæmia on the other. It is characterised by the following symptoms. The patients are usually children, and the majority have been males. There is a marked protrusion of one or both eyeballs, which is associated with pain, and later

with blindness and optic neuritis. Deafness has occurred in most of the cases. The cervical glands are often enlarged. The skin and mucous membranes show petechial hæmorrhages, and sometimes small nodules, which may have a green colour. The blood shows certain definite changes. The number of red cells is markedly diminished, sometimes being as low as 1,000,000. Nucleated reds are frequently present. The amount of hæmoglobin is also greatly diminished. The number of whites may or may not be increased; but whether increased or not, there is a relatively great diminution of the polymorphonuclears and small lymphocytes, and a relatively great increase of the medium and large lymphocytes. The number of whites may reach 300,000 per c.mm. Myelocytes are sometimes present. The disease is rapidly fatal, usually within four months.

Post mortem there are found growing from the bones of the skull in various positions, tumour masses apparently of a lymphoid nature and of a greenish yellow colour. A usual site is the orbital cavity, the presence of the tumours giving rise to the protrusion of the eyeball. They may also grow from the nasal bones, or from the palate. Similar masses occur in the vertebral canal, often compressing the cord and causing ascending degeneration. They also occur in front of the vertebral column, and may also grow from the sternum. The lymphatic glands of the body are usually all more or less enlarged, and present the peculiar green colour. Metastases of the tumour, also presenting the green colour, occur in heart, liver, and kidneys. The heart in addition shows fatty degeneration. The spleen is enlarged. The bone marrow also shows the green colouration.

Microscopic examination of the tumour shows that it consists of (1) cells which are about the size of a large lymphocyte: they are round with a relatively large nucleus which stains fairly deeply; (2) a supporting stroma which recalls that of a lymph gland; (3) rounded clusters of granules of a fatty nature, staining faintly with osmic acid and sudan iii, lying between the

cells. These granules are, however, not invariably present. The metastases in the different organs show a similar structure. The lymph glands show hyperplasia with large round cells in their sinuses similar to those of the tumour. These cells also occur in the sinuses of the spleen. The bone marrow also shows large numbers of similar cells, and there are distinctly fewer nucleated reds than usual.

With regard to the nature of the disease and its position in pathological classification, there is some difference of opinion. Bramwell and Dunlop seem to consider that chloroma is closely related to leukæmia, the former stating that they are different grades in the same pathological process. The two German authors on the other hand are inclined to place the disease among the lymphosarcomata, calling it chlorolymphosarcoma. They base this opinion on the fact that the leukæmic condition of the blood is not invariably present in the disease, and that when present it occurred in several cases only a few days before death. A similar phenomenon has been noticed in ordinary cases of lymphosarcoma. The appearance in the blood of an excess of lymphocytes is therefore, according to them, a purely secondary condition. Risel, finding in his case that the mesenteric glands were tubercular, and finding that tubercular lesions had been described in connection with other cases, lays some importance on this as a primary cause.

With regard to the cause of the peculiar green colour of the tumour masses and their metastases, there is also a difference of opinion. Huber, Chiari, and recently Höring considered that the colour was connected with the little masses of peculiar granules found between the cells of the tumour, but these are not present in all cases. Waldstein thought it was a derivative of blood pigment. The colour rapidly fades on exposure to the air, but partially returns on treatment with a reducing agent, indicating the presence of an oxidizable pigment. Huber, Chiari, Höring, and Dunlop suggest that it is some chemical product allied to lipochrome.

The Relation of the White Blood Corpuscle to several Surgical Diseases, especially to Appendicitis.—(Wassermann, *Münchener Medicinische Wochenschrift*, May 6th, 1902.)

This paper is specially interesting in view of Hewetson's work published in the *Birmingham Medical Review* of March and April. It is the result of extensive investigations carried out in the surgical Klinik in Munich. The instrument used in counting was the Thoma-Zeiss hæmocytometer. As the result of 400 counts on 47 different normal individuals, 4,000 and 11,000 per cubic millimetre were taken as the limits of the leucocytes under normal conditions.

The author commences by giving a *résumé* of a paper by Curschmann (*Mün. Med. Wochensch.*, 1901, 48 and 49) where it is stated, as the result of observations on sixty cases, that "in the vast majority of cases the leucocyte count gives a means of certain diagnosis between simple fibrinous exudation and abscess formation, where other signs and symptoms leave one in doubt." Curschmann fixed the boundary line at 20–22,000, a persistent count of 25,000 meaning pus. Wassermann gives in detail ten representative cases with daily leucocyte counts, and he draws the following conclusions from them.

The leucocyte count is of the greatest importance in cases of ileo-cæcal suppuration, as a high count will frequently indicate the presence of pus when temperature, pulse, and other clinical signs give no such indication. This independence of the leucocytic from the other signs and symptoms gives a delicacy to the leucocyte count as an assistance to diagnosis, which is possessed by none of these symptoms and signs.

Wassermann deprecates Curschmann fixing a definite limit between suppurative and non-suppurative, as in two groups of cases a low leucocyte count may be quite compatible with pus. The first group is where the organism has failed to react to the poison; the other, where the pus has become encapsuled by dense adhesions.

The leucocytosis of appendicitis consists in an increase of the polymorphonuclear neutrophyl leucocytes, and cannot be distinguished from the leucocytosis of other inflammatory conditions.

Investigations of the pus in the several cases showed many kinds of organisms. Sometimes *B. coli* in pure culture, at other times strepto-cocci. *B. pyocyaneus* was found in one case (first recorded case); *B. proteus* was present in pure culture in more than one case (only one previously recorded case); anaërobic organisms were frequently found. The form of organism present had no influence on the number of leucocytes.

Comparison with other surgical diseases showed that traumatic irritation of the peritoneum gave only a slight increase in the number of white cells. Other suppurative conditions—paranephritic abscess, suppurating cervical glands, abscess of the prostate, mastitis (three cases of staphylococcus infection, all under 15,000)—showed only a moderate leucocytosis. Cases of septicæmia and erysipelas showed a marked leucocytosis (20–30,000).

These results agree in all important points with those of Hewetson.

Paratyphoid.—(Brion and Kayser, *Münchener Medicinische Wochenschrift*, April 15th, 1902.)

This case is of importance from the point of view of the reliability of the Widal reaction, and the exact meaning of a negative result. It indicates that it is by no means certain that we have an unchanging species in the bacillus typhosus. Many bacteriologists hold that there is no reliable means of distinguishing between *B. coli communis* and *B. typhosus*, that on the contrary the two are modifications of the same organism, and that transformation from the one into the other is not impossible. Pathologists are inclining more and more to the idea that typhoid is a septicæmia more than a mere intestinal lesion; that, in other words, it is the entrance into the blood of a pathogenic organism, rather than the formation of intestinal ulcers, which produces the symptoms included under the word typhoid. The Widal reaction is a specific one, that is, it is given by the serum of a typhoid patient with the *B. typhosus* not with the *B. coli*, and it is probable that it would not be given with intermediate forms. We are thus prepared for conditions having

the symptoms and signs of typhoid, but not giving the Widal reaction. This case also illustrates the importance of examining the blood bacteriologically in obscure conditions. Similar cases to the following have been described by Schottmuller (*Zeitschrift f. Hyg. Bd.* xxxvi, p. 368, and *Deutsch. Med. Wochens.*, 1900, No. 32) and others. Schottmuller collected six cases and separated two types of typhoid-like organisms, A and B.

The case reported by Brion and Kayser was that of a girl, æt. 16, who on admission was at first found to be suffering from a typical gonorrhœa of urethra and vagina. Her temperature rose suddenly, her spleen became enlarged, an irregular fever continued for five days; patient was discharged after a week. The vaginal condition had disappeared under treatment. In three days the patient came back. Fever was again present and continued for a week, when a typical typhoid rash appeared. The blood was examined bacteriologically, and was found to contain a typhoid-like bacillus. The serum of the patient agglutinated none of the cultures of the *B. typhosus* in the bacteriological institute, but it agglutinated this bacillus. The same organism was discovered in the spots, also in the pus from the urethra and vagina, gonococci being no longer present. Blood counts showed reds 4,000,000, whites 5,500. The fever gradually disappeared. From the urine a typhoid-like bacillus was cultivated. Some days later the temperature again rose suddenly to 39.9° C., but again fell. Bacteriological investigation of the urine showed it to be sterile. A few days later there was another rise of temperature and another outbreak of rash. The serum of the patient had no agglutinating action on typhoid bacilli. Temperature again fell to normal after five days. A fortnight later the patient left the hospital.

On two occasions blood was withdrawn from the veins of the arm under the usual precautions, and cultures made on blood agar. After forty-eight hours, light grey colonies were seen. Further examination showed the presence of a typhoid-like bacillus. Cultures from the spots and urine showed a similar bacillus, also cultures from the fæces on one occasion.

The bacillus, which is Gram negative, is actively motile, and resembles *B. coli* in form and size. It grows well at 37°, also at 21°. Colonies on gelatine are about the size of a pin head after twenty-four hours; they are light grey and transparent. The growth is less active than *Bacillus coli*. Indol is not produced. Milk remains unchanged. Growth on potatoes is similar to that of *B. typhosus*. In dextrose and maltose media, acid is developed; also gas. Pathogenicity for white mice and for guinea-pigs is considerable; less so for rabbits. Experiments showed that pus was developed at the seat of inoculation. General infection was also produced, and the organism was cultivated from heart, blood, and spleen.

Agglutination phenomena.—One part of the serum of the patient to 1,000 parts of a twelve hour bouillon culture of the bacillus showed rapid agglutination microscopically. Similar marked agglutination was shown by serum of rabbit obtained by repeated subcutaneous injections of dead cultures of the paratyphoid. Specimens of Schottmuller's cultures (types A and B) were obtained. The serum obtained from the rabbit agglutinated type A in a proportion of 1 : 750 macroscopically; 1 : 1,000 microscopically. Type B was not agglutinated. None of the races of *B. typhosus* in the laboratory were agglutinated. On the other hand, typhoid immune serum did not agglutinate *B. paratyphi*.

On reconsidering the case clinically, parts of the temperature chart were like typhoid. The pulse was typhoid-like. There was no diarrhoea. The tongue was not like that of a typhoid patient. The leukopenia was, however, in favour of typhoid. The roseola and enlargement of spleen were, however, very characteristic. The bacilli were found in the vagina, but that is no proof that it was the primary site of infection. In only one out of three attempts was the organism found in the fæces, but this is no proof that the infection was not from the intestine. Similar cases have been recorded by Kurth (*Deutsch. Med. Wochens.*, 1901, 30 and 31).

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

Session 1901-1902.

The Sixth Ordinary Meeting of the Session was held in the Birmingham Medical Institute, on March 13th, 1902, Dr. E. MALINS, President, being in the Chair.

Forty-nine members were present.

Confirmation of Minutes.—The Minutes of the previous meeting were read, confirmed, and signed.

Nomination of Officers for 1902-1903.—The following nominations were received, namely:—

President-Elect.—Mr. Jordan Lloyd ; *Treasurer*, Mr. F. Marsh ; *Hon. Secs.*, Mr. J. T. J. Morrison and Dr. T. Sydney Short.

Representatives in the Council of the Association.—Mr. Langley Browne, Mr. W. F. Haslam, Mr. Jordan Lloyd, Mr. E. B. Whitcombe.

Representatives on the Parliamentary Bills Committee.—Mr. S. H. Agar, Senr., Mr. Gilbert Barling, Mr. J. T. J. Morrison.

Country Members of Council.—Dr. E. Deanesly, Mr. A. Freer, Dr. J. H. Joy, Mr. M. A. Messiter, Dr. Milner Moore, Dr. E. N. Nason, Mr. J. F. G. Pietersen, Dr. T. W. Thursfield, Mr. F. W. Underhill, Dr. T. E. Underhill.

Town Members of Council.—Mr. H. Eales, Dr. A. Foxwell, Mr. G. Heaton, Dr. E. D. Kirby, Dr. H. R. Leech, Dr. R. F. C. Leith, Mr. C. Martin, Mr. Bennett May, Mr. R. A. Newton, Dr. E. Rickards, Dr. J. W. Russell, Dr. R. Saundby, Dr. T. Stacey Wilson.

Ethical Committee.—Mr. Langley Browne, Mr. M. Hallwright, Mr. W. F. Haslam, Mr. M. A. Messiter, Mr. A. Oakes, Dr. R. Saundby, Mr. Priestley Smith, Dr. T. W. Thursfield, Mr. W. P. Whitcombe.

EXHIBITION OF SPECIMENS, ETC.

Sarcoma of Ovary.—Dr. Smallwood Savage showed a Solid Ovarian Tumour, which he had removed in August, 1901, from a patient, æt. 48. She had had eight children, the last, ten years ago. The menopause occurred $8\frac{1}{2}$ years before, and she had seen nothing for $6\frac{1}{2}$ years, when menstruation began again, and continued regularly until the time of operation. A swelling of the abdomen had been noticed five months, and a firm tumour was felt rising out of the pelvis and reaching one inch above the umbilicus; it was distinct from the uterus. Ovariectomy was performed and the patient made a satisfactory recovery. The tumour was almost completely solid, and contained only a few cysts; it was bilobed in form, and about the size of an adult head; there was one adhesion to the rectum. On section, there was a firm fibrous capsule, below which the surface presented a uniformly granular appearance. On microscopical section, the growth showed a fine reticular meshwork containing small angular or oat-shaped cells. There were no epithelial cells. Only the left ovary was affected, the right being small and normal in appearance; this latter was not removed.

Popliteal and Gluteal Bursa.—Mr. Jordan Lloyd showed a Bursa, which he had removed entire from beneath the semi-membranous tendon; and a similar specimen dissected from under the ischial tuberosity.

Sarcoma of Fibula.—Mr. Jordan Lloyd also showed a specimen of Sarcoma of the lower end of the Fibula, which he had treated by free excision of the affected bone.

Modification of Scarpa's Shoe.—Mr. W. E. Bennett showed the apparatus he had devised for increasing the efficiency of Scarpa's Shoe.

PAPERS.

Rectal Carcinoma, and the prolongation of life by Colotomy.—Mr. F. Victor Milward read a paper with the foregoing title, under the following headings:—

Rectal Carcinoma compared with other rectal diseases. Brief

pathology. Different forms assumed by growths, with their different clinical symptoms. Implication of glands. Diagnosis. Growths involving first part of rectum, more difficult to diagnose. Statistics of all the cases of Carcinoma admitted to the General Hospital, 1898-1900. Statistics of 100 cases of Rectal Carcinoma admitted 1895-1900, and a comparison between these and Carcinoma of the rest of the alimentary canal treated during that period. Cases traced after Colotomy, showing subsequent duration of life.

Mr. Jordan Lloyd, Mr. G. Heaton, and Mr. W. E. Bennett took part in the discussion; and Mr. Milward replied.

Phthisis and Sanatoria.—Mr. Alfred Freer read a paper on this subject, with the following points:—

Sanatorial exile; how long? No analogy between Phthisis the Chronic and Scarlatina the Acute.

Modern dictum, "Consumption infectious," not proven. Scarcely about tuberculous milk-poisoning needless.

Objections against notification of Phthisis.

Sanatorial Retreats, blessings to the poor in the advanced stages of Phthisis.

Bacteriologists speak too *ex cathedra*. Science infallible, but not all its interpreters.

The paper was discussed by Dr. Kauffmann, Dr. Kirby, Mr. Oakes, and Dr. Rickards; and Mr. Freer replied.

KIDDERMINSTER MEDICAL SOCIETY.

A Meeting of this Society was held on Friday, April 11th, Mr. W. J. LIONEL STRETTON, President, in the chair.

The President showed:—

1. A Large Gall Stone, weighing 280 grains, removed from a lady, æt. 60. When seen in consultation, she was suffering from acute obstruction of the bowels. The stone was found jammed in the lower part of the ileum, and was removed by incision of the intestine. The patient made an uneventful recovery.

2. An Enlarged Ovary removed from a girl, æt. 23, on account of chronic pain, with complete relief of her symptoms.

3. Two Appendices Vermiformes. The first was removed from a lady, æt. 46. There had been only one acute attack previous to the operation. The appendix was over three inches long, and was firmly attached at its apex to the uterus. Recovery was uneventful. The second was removed from a boy, æt. 5. The abdomen was opened for suspected tubercular mischief, and a large number of enlarged mesenteric glands were discovered. The appendix was fully four inches long and bulbous at the top, and it was therefore removed. Recovery was rapid, and the boy was very much improved in health.

4. Part of the Femoral and Popliteal Arteries from an amputated lower limb of a woman, æt. 50. She had suffered from rheumatic fever. She was suddenly seized with acute pain in the left leg, which rapidly became gangrenous, and was amputated six days later. The vessel was filled with clots, from the site of operation at the upper third of the thigh to below the bifurcation of the popliteal artery.

5. Two inches of the Rectum removed from a woman, æt. 48. Two months previously, on January 20th, a small pedunculated fibroma was removed, and the pathologist reported that a portion of the base was malignant. As this area continued to give trouble and was felt to be indurated, it was decided to remove the bowel. The sphincter was left, and the bowel stitched down to the edge of the skin.

6. The right lobe of a Thyroid removed from a girl, æt. 15, about the size of an orange. After apparently healing by first intention, at the end of ten days there was a sudden rise of temperature, and suppuration commenced. Mr. Stretton commented on the frequency of late suppuration in such cases, and suggested, as a contributory cause, the impossibility of securing complete rest.

7. A girl, æt. 24, upon whom he had operated for Gastric Ulcer. She had suffered from two previous attacks of hæmatemesis, and after a severe attack on Feb. 29th, she was removed

to the hospital for observation. On March 3rd, she had a sudden attack, vomited about two pints of blood, and became so collapsed that the House Surgeon thought she was dying. Mr. Stretton saw her about an hour later, and about two hours afterwards, after a hypodermic injection of liq. strych. $\text{m} \times$ and saline transfusion, opened the abdomen. Nothing was discovered by external examination of the stomach, so a longitudinal incision was made in the anterior wall, and a systematic examination made. The bleeding surface was discovered on the posterior wall. It was about as large as a florin, and consisted of an abrasion of the mucous membrane, showing the mouths of arterioles from which blood was freely flowing. Such a condition is described by Dieulafoy as "*Exulceratio Simplex*." The portion of stomach was inverted and several silk sutures were passed under the bleeding area and tied over it. The wound in the stomach was closed with a double row of interrupted sutures, and the abdomen closed. The girl was very collapsed for the first twenty-four hours, but had made an uninterrupted recovery.

Mr. Naylor read notes of a case of Tetanus, which had arisen from a boil on the back of the neck, in a boy, *æt.* 15. Difficulty of swallowing and stiffness of the jaw began ten days after the appearance of the boil. Opisthotonos and rigidity of the muscles of the forearm rapidly supervened, and three days later he had two clonic convulsions. The attacks continued increasing in severity until he died from exhaustion seventeen days after the appearance of the boil. He was treated with gr. 15 doses of chloral and potassium bromide four hourly, $\frac{3}{4}$ gr. hypodermic injections of morphia, which controlled the spasms somewhat, inhalations of chloroform, and six doses in all of 1500 units of anti-tetanic serum.

A discussion on Vaccination followed, which was opened by Dr. Evans.

REVIEWS.

THE STUDY OF THE PULSE, ARTERIAL, VENOUS, AND HEPATIC, AND OF THE MOVEMENTS OF THE HEART.*

THE admirable treatise on the pulse just published by Dr. Mackenzie throws not a little new light upon the working of the heart under normal and pathological conditions. The labour involved in this minute and detailed investigation must have been enormous, and the greatest credit is due to the author, not only for the magnitude of his work, but also for the thoughtful and ingenious interpretations which he has suggested of the phenomena observed. Moreover, he has treated a subject, which must necessarily be somewhat dry, in the least possible dry manner; and his writing is so clear that even those who are unaccustomed to the study of heart and pulse tracings will follow his reasoning without difficulty.

After describing the instrument by means of which he has obtained most of his tracings, Dr. Mackenzie devotes a short chapter to the interpretation of an ordinary sphygmogram. We note with interest his demonstration of the fact that the phenomenon of dicrotism, which is usually exaggerated by the lowering of arterial pressure, yet becomes almost absent when this pressure is reduced beyond a certain limit. Hence he points out that its complete absence may be an ominous sign, as at the beginning of an attack of pneumonia, and that its reappearance would then be a fact of good significance. Hyperdicrotism is believed to be merely a result of quickening of the pulse. In the succeeding chapter, Dr. Mackenzie shows that there is an actual drawing up of the liver during ventricular

* The Study of the Pulse, Arterial, Venous, and Hepatic, and of the Movements of the Heart. By James Mackenzie, M.D. (Edin.). Edinburgh and London: Young J. Pentland. 1902.

systole, not a downward thrust, as is usually believed. The epigastric pulsation due to a dilated right ventricle is similarly shown to take place in the reverse order of what is usually imagined, the retraction of the epigastrium, not the protrusion, corresponding to the carotid pulse. Some interesting observations on the apex beat bring this chapter to a close.

The next four chapters deal with certain other features of the normal pulse, but in the ninth chapter the more typical part of the writer's work begins, in the investigation of some of the phenomena of pulse irregularity. Two main types are recognised, namely, (1) the youthful type, in which irregularity occurs through variation in the duration of the diastolic period of the cardiac cycle; and (2) the adult type, where there is a variation in the duration of the systolic as well as of the diastolic period. In the latter, the small imperfect beat is shown to be due to an incomplete and premature ventricular systole. In the third part of the book, which is entirely given up to the investigation of pulse irregularities, these phenomena are studied with the help of the venous pulse, and the cases are further classified as follows: (1) cases in which the auricles and ventricles both participate in the irregularity; (2) cases where the auricle preserves its rhythm during irregular action of the ventricles; (3) where the ventricle fails to respond to the stimulus of the auricular systole; and (4) cases where the auricles are paralysed. This investigation has involved a large amount of original research, and is followed up with great minuteness of detail.

The tenth chapter deals with the clinical significance of irregularity, and it is instructive to note that Dr. Mackenzie considers the distinction usually made as concerns prognosis between an irregular and an intermittent pulse, to be purely artificial. The appearance of an irregular pulse in cases of fever may, he thinks, sometimes be a good sign, as being due to a slowing of the heart beat. Irregularities occurring in pneumonia and in chloroform anæsthesia are specially considered. Chapter XI deals with the subject of increased frequency of the pulse, and

in it the author suggests that attacks of paroxysmal tachycardia are really due to a long-continued series of premature systoles. The next two chapters deal with diminished frequency of the pulse, and the pulse in febrile conditions ; and this first section of the book is brought to an end by a consideration of some of the more characteristic pulses and the relation of the pulse to the respiration.

The second part of the book deals entirely with the venous and liver pulses. The venous pulse is taken from the jugular veins, and, when it occurs, shows the existence of a free communication between them and the right auricle. Hence, the venous pulse represents or registers the variations of pressure occurring in the right auricle during the cardiac cycle. Two main waves are generally to be seen in tracings of the jugular pulse, one, due to the systole of the auricle, and the other caused by its gradual filling. This latter wave is of course much exaggerated in cases of tricuspid incompetence, owing to the extra quantity of blood received from the right ventricle. It is interesting to note that in the worst cases of tricuspid incompetence the former, or auricular, wave becomes lost, showing that the progressive over-distension of the auricles ultimately results in their more or less complete paralysis. Dr. Mackenzie suggests that in this paralysis lies the explanation of the disappearance of the presystolic murmur in advanced cases of mitral stenosis, and in a later chapter he states that a presystolic murmur is never present when the auricular wave is obliterated. Such paralysis occurs only in cases of long-standing mitral disease with well-marked hypertrophy of the ventricular muscle. In cases of weakening or degeneration of the muscle, the force tending to over-distend the auricles is of necessity less, and they remain active to the end. The liver pulse is similarly only met with in cases of long-standing valvular disease, and is absent in cases of muscle failure.

The presence or absence of the auricular wave distinguishes two classes of venous pulse, and, as contended by Dr. Mackenzie, the significance of the distinction is very considerable. The

clinical bearing of the matter is fully discussed in the three last chapters of this part of the book. These chapters also take into consideration the meaning to be attached to the existence of the liver pulse and its varieties.

The third part of the treatise is, as we have already stated, devoted to the further examination of pulse irregularities, and we have given an outline of the main distinctions which are described.

Our review gives but a very rough sketch of some of the leading points of this very important book. Both for its scientific value and the practical clinical outcome of its researches, it deserves to be widely and carefully studied.

THE TREATMENT OF INJURIES BY FRICTION AND MOVEMENT.*

IN this little volume Mr. Wharton P. Hood deals with a branch of surgery, in which he has undoubtedly had a very large experience. We notice with some interest that he introduces his subject, by alluding to the circumstances under which his knowledge and treatment have received much modification.

The fact that one of the medical profession should have spent about two years in watching and profiting by the proceedings of a bonesetter, demands, we think, a little enquiry, and not merely a scornful rejection. It suggests the uncomfortable feeling that the student of medicine, with all his systematised study in practice and theory, can, or rather could twenty-five years ago, learn much from a dalesman whose knowledge could only have been acquired through pure empiricism, based upon dim ancestral traditions. Mr. Hutton may have been, and probably was, the best bonesetter ever born, and a perfectly honest man, and we do not doubt that some of his methods were correct, but we cannot forgive him, or others of his calling, the responsibility

* The Treatment of Injuries by Friction and Movement. By Wharton P. Hood, M.D., M.R.C.S., L.S.A. London: Macmillan and Company.

they incur, in treating diseases which they must at one time or another mistake for injuries.

There is much of truth in Mr. Hood's methods of treatment, which are now adopted by many English surgeons, thanks to the example of Lucas-Championnière. Mr. Hood builds his whole theory of the value of early massage over strapping, and early voluntary movements, on the fact that venous stasis causes lack of repair and is due to muscular inhibition. He considers of secondary importance the actual laceration of muscular fibres, at the seat of fracture, and the extravasation which then takes place among them, and sees no advantage to be gained by bringing the bony surfaces into perfect apposition. If he is correct in this theory, early voluntary movements may be theoretically proper, but we cannot accept his doctrine in its entirety, however good may be the practical results. On the whole, this volume contains much that is useful and of practical value in the treatment of subcutaneous injuries of the limbs. We must, however, take exception to his treatment of fractures of the olecranon process and patella, which we are astonished to see described in any book on modern surgery. In the former, he considers wiring to be unnecessary, and "a good and useful joint will be procured, even if the ultimate separation should be as much as an inch." In speaking of fractured patella, the author tells us, that no attempt should be made to bring the fragments either into apposition, or even very near together.

The treatment of coccygodynia by merely correcting the displacement is also to us somewhat ambiguous.

A SYSTEM OF PHYSIOLOGIC THERAPEUTICS.*

IN reviewing the former volumes of this series we described and commented upon the aims and intentions of the authors, so that it will not be necessary to say more on these points than that

* A System of Physiologic Therapeutics. Vol. VI, Dietotherapy and Food in Health. By Nathan S. Davis, Junr., A.M., M.D. London: Rebman Limited. 1901.

the present work is well up to the level of its predecessors. It deals with Dietotherapy under the two principal heads of: (1) General Principles of Diet, and Diet in Health, and (2) Diet in Disease.

The first part deals fully with food-stuffs taken seriatim, and much useful information is presented in a readable form. Dietaries and the actual value of the different food-stuffs are here considered, the articles on alcohol being especially interesting.

In the second part, diseases—or we might perhaps more truthfully say, conditions more or less removed from health—are dealt with under separate headings, and the diet found most suitable for each is discussed. The article on obesity will be picked out by most readers we imagine directly the book is taken up, in order to see if the author has any new ideas on this subject. In this particular instance the matter is not overdone, and the author presents a fair *résumé* of the different methods of treating fatness by the alteration of the diet. It must be admitted that after comparing the various views and different diets recommended by authorities, one is inclined to the opinion that the basis of them all is starvation—pure and simple, and that the diverse methods only differ in detail—we might perhaps also add in degrees of practicability and pleasantness.

A book like the one before us is all the more interesting just at the present time, because there seems to be a revulsion of feeling in the minds of many medical men as to whether—with certain important exceptions—the diet is of so much value in the treatment of disease as has been supposed. Conditions such as diabetes, gastric ulcer, enteric fever, gout, and rheumatism, certainly depend for their treatment upon careful dieting, and although the list might easily be augmented, there is no doubt that in a considerable number of diseases a few broad principles of dietetic treatment are all that are required. Most adults know pretty well what diet is best for them in spite of the asseverations of their relatives and friends that they *will* take what doesn't suit them. Every physician of experience must have noted,

after carefully writing out a dietary for a patient, the not unusual rejoinder, "Why this is pretty much what I have been in the habit of taking for years."

Practitioners, however, who are in the want of hints for the construction of dietaries will find their requirements satisfied by the volume before us.

NERVOUS AND MENTAL DISEASES.*

IN the first edition of their work Drs. Church and Peterson stated that they made no claim for it to be other than a carefully prepared text-book. The care, however, which they bestowed on it soon obtained for their work on Nervous and Mental Diseases a well merited place in this special department of medicine. The third edition has been carefully revised throughout, and the already valuable series of illustrations and diagrams has been increased. The result is one of the most concise text-book of neurology that we have had the privilege of reading. The book is free from that tendency to diffuseness, which has crept into recent treatises on nervous diseases. Throughout the book there are pages of tabular diagnoses and other facts.

The chapter on Cerebral Hæmorrhage and the Hemiplegic State (chapter vi.) is one of considerable interest. The subject is treated in somewhat different manner than is usually done, and is a good specimen of the able method of clinical description characteristic of the book. Cerebral Softening (chapter vii.) is very instructive. As might be expected, cerebellar ataxy, which has received much attention at the hands of American neurologists comes in for a fair share of consideration. We may safely say, however, that the able chapters on Neuroses form the leading feature of the work; thus, Hysteria, Epilepsy, and different forms of Spasm and other motor neuroses are described fully and clearly. We notice that the writers include Huntington's

* Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D. Third edition. London and Philadelphia: W. B. Saunders and Co.

Disease under the head of motor neuroses, although they admit that this latter term is rather one of convenience than of strict scientific accuracy. Recent investigations on the morbid anatomy of Huntington's Disease support its claim to a distinct lesion of central mental system. The portion of the book dealing with nervous diseases is from the pen of Dr. Peterson. It is perhaps less extensive in proportion to the rest of the book, but as the object of the writer is to give a clinical description of mental diseases, rather than a psychological treatise on morbid mental states, he is well advised in keeping this portion of the book within limits. In some cases there is a tendency to curtail description of morbid anatomy, but on the whole we can safely say the work is one of high merit, and we can strongly recommend it to the advanced student and specialist alike.

ATLAS AND PRINCIPLES OF BACTERIOLOGY.*

FROM time to time we have had the pleasure of reviewing volumes of Messrs. W. B. Saunders' Series of Medical Hand Atlases. We have always acknowledged the great excellence and scientific value of those already published, and as each new work has appeared, we have but repeated our expression of opinion, and we do so now in favour of the Atlas of Bacteriology. This work is in two volumes, uniform with others of the series. Vol. I contains the plates; Vol. II, the letterpress. The former are among the most perfect of their kind that we have seen. In fact, the appearance of cultures in tubes and on plates is so faithfully reproduced, that it leaves nothing to be desired. Plate 34 gives nine different illustrations of the B. anthracis, which are so life-like, that the most inexperienced student should be able to recognise the real culture at first sight, had he seen the illustration. The method followed is to give a series illustrating the growth of each organism in stab and streak

* Atlas and Principles of Bacteriology. By Prof. K. B. Lehmann and R. O. Neumann. Edited by Geo. H. Weaver, M.D. London and Philadelphia: W. B. Saunders and Co.

cultures, and on gelatine plates, at different stages and under different magnifications. These are followed by preparations representing the microscopic appearances stained and unstained. Vol. II is devoted solely to description of Bacteria and allied organisms, and is well written. The characteristics of each organism are given according to a fixed method, as they are perceived in stab or surface culture, or in liquid or other media.

An appendix follows, which gives many useful details as to staining and preparing.

We most confidently recommend this work as, without doubt, the best atlas of bacteriology that has as yet appeared ; and we feel we must repeat the remark made in reference to other works of the series—"The very moderate price brings the book within reach of all."

THE HEALING OF NERVES.*

HITHERTO there have been two opposing theories put forward as to the method, by which the distal portion of a peripheral nerve-trunk is regenerated after section of the nerve. The one theory, and the one that has been accepted by the majority of writers, is that the new axis-cylinders in the regenerated distal segment are direct outgrowths from those in the proximal segment, the young axis-cylinders growing downwards and replacing the degenerated old ones. This may be called the "central" theory. The other theory, which may be called the "peripheral," is that the new fibres in the distal segment are formed from pre-existing cells in the distal segment itself. Messrs. Ballance and Stewart have exhaustively investigated the subject and have drawn their conclusions from 140 observations, the majority being based upon experiments on living animals. The conclusions arrived at may be shortly summed up as follows:—

1. "Even in the distal segment of a non-united nerve, regeneration of axis-cylinders and of medullary sheaths takes

* The Healing of Nerves. By Charles A. Ballance, F.R.C.S. and Purves Stewart, M.D. London : Macmillan and Company. 1901.

place, although full maturity of the new nerve-fibres is not attained, unless the distal segment is joined to the proximal."

2. The new axis-cylinders are undoubtedly formed by proliferation of the neurilemma cells of the distal segment. These form "spider-cells," which join end-to-end and so form a continuous axis-cylinder.

3. The medullary sheath is "laid down by a process of secretion along one side of a spindle-shaped neurilemma cell."

4. A nerve-graft plays a passive part only, being ultimately infiltrated by neurilemma cells from both segments, and by these cells the new nerve-fibres are formed.

It will thus be seen that the result of the author's work is that the "peripheral" theory must be held to be correct, and that the neurilemma cell is the all-important factor in the process of nerve-regeneration. Messrs. Ballance's and Stewart's investigations have evidently been most carefully carried out, and the results obtained are most important. The authors have again proved, if indeed proof were needed, the enormous value of carefully performed experiments on living animals.

OUTLINES OF PRACTICAL PHYSIOLOGY.*

THE fourth edition of Prof. Stirling's admirable Manual of Practical Physiology has been brought thoroughly up to date, and has undergone not a little alteration in the process. In a science like physiology, which is in an acutely progressive stage, a few years produce an extensive crop of new facts, and largely modify the conclusions drawn from those previously known. Prof. Stirling's book deals less with conclusions than with the details of practical experiment, and hence less re-writing has

* *Outlines of Practical Physiology.* By William Stirling, M.D., Sc.D., Brackenbury Professor of Physiology in the Owens College, and Professor in Victoria University. Fourth Edition, revised and enlarged. London: Charles Griffin and Company, Limited. 1902.

been needed than would be the case in a theoretical manual. Nevertheless, there is ample evidence that the whole book has undergone careful revision. The process of extension is most marked in the sections dealing with the examination of the senses, and this part of the book has been very considerably developed. Its subject is one of immense importance in practical medicine, and these chapters are well worth careful study by others than students in the physiological laboratory. We need scarcely say that the book has obtained an assured place in the estimation of teachers of practical physiology, and the appearance of an up-to-date edition will be cordially welcomed by them.

DISEASES OF THE DIGESTIVE ORGANS IN INFANCY AND CHILDHOOD.*

THE great importance of digestive disorders in children—the fact that they form by far the major part of all the illnesses of infancy, is sufficient to warrant the publishing of any important contribution to the management of the alimentary system and its diseases. This book, however, coming from the pen of Dr. Louis Starr, one of the leading authorities on pediatrics, is without doubt one that has been of great value to the physician. We therefore welcome the appearance of a third edition, which contains much additional matter, notably on the subjects of Infantile Scurvy, Rickets, Infectious Follicular Tonsillitis, Adenoids, Appendicitis, and particularly a chapter on Lithæmia as occurring in children. We feel certain that the work will be of interest and value to all concerned in the treatment of children's diseases, as it is eminently practical, especially as regards treatment. Many important recipes for preparing foods are included in the work.

* Diseases of the Digestive Organs in Infancy and Childhood. By Louis Starr, M.D. Third edition. London: Rebman Limited.

FORENSIC MEDICINE AND TOXICOLOGY.*

THE new edition of Prof. Dixon Mann's well-known Manual has needed but little alteration. The various sections stand very nearly as in the second edition published in 1898. Wherever necessary, the work has been brought fully up to date, but practically the addition of a few poisons, and the re-writing of the section on Arsenical Poisoning in accordance with the experience gained in the recent epidemic constitute the extent of the changes. The book still stands without a rival as a student's textbook of forensic medicine and toxicology, and a practitioner's work of reference.

Correspondence.

The Editor, *The Birmingham Medical Review*.

"THE WAR AGAINST CONSUMPTION."

Dear Sir,

I have to thank you for your notice of my little book with the above title in the May number of your valuable Review. As I thoroughly agree with your reviewer's deprecation of the multiplication of books on medical subjects for popular consumption, perhaps you will allow me to offer some justification for the publication of the volume in question. While I agree that the circulation of pseudo-medical treatises in popular language may often be attended by undesirable results, it does not, I think, follow that there may not be cases in which the promulgation of medical knowledge among the general public may be of good. In the case of pulmonary tuberculosis, it seems

* Forensic Medicine and Toxicology. By J. Dixon Mann, M.D., F.R.C.P., Professor of Forensic Medicine and Toxicology in Owens College, Manchester. Third Edition, revised and enlarged. London: Charles Griffin and Company, Limited. 1902.

to me that there is especial need for the circulation of accurate information, inasmuch as not only the welfare of the afflicted person, but also the safety of the public may depend upon the patient and his friends possessing a knowledge of the nature of the disease, and the ways in which the spread of the contagion may be prevented. There is also the fact that a more extended appreciation of the value of sanitation and hygienic conditions of life in checking the inroads of consumption would undoubtedly largely reduce the number of victims of the disease. On these facts alone, I think there would not be much difficulty in justifying the appearance of a book on the subject, written, like my own, avowedly for the instruction of the public. Indeed, your reviewer himself admits that one of the most striking features of the Congress on Tuberculosis was the unanimity with which the education of the public on the matter was advocated.

There is, however, another consideration, which your reviewer seems to have overlooked. The Congress, of which my little volume is a *résumé*, was by no means an exclusively medical assembly. It was very largely attended by the laity, including members of municipal authorities, architects, farmers, meat and milk vendors, etc., many of whom read interesting and valuable papers. Nor were the topics discussed by any means solely of a medical nature. For these reasons, it seems to me that a volume summarising in popular language the proceedings of a catholic gathering of this kind can hardly be classed with the type of works of which your reviewer not unwarrantably expresses his disapproval.

With apologies for troubling you with this somewhat lengthy letter,

I am,

Yours faithfully,

24, Alexander Square,
Brompton, S.W.,

DENNIS VINRACE.

May 7th, 1902.

We have received further correspondence from Dr. Vinrace,

enclosing a letter from Dr. Frederick Roberts disclaiming any intention of disparaging books like the one referred to above. We are glad to hear it, but do not feel that the letter requires publication. Our reviewer expressed a perfectly legitimate opinion and stated it with moderation. We do not think that Dr. Vinrace has anything to complain of. Ed.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

WE have received the following from Messrs. Burroughs and Wellcome:—Tabloid Liquorice Compound Powder, each tabloid containing 30 grains of the powder. This tabloid has the advantage of concealing the unpleasant taste of the preparation. Tabloid Kino Compound Powder, containing 5 grains of the official powder.

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New Books, etc., Received.

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The Diagnosis of Nervous and Mental Diseases. By HOWELL T. PERSHING, M.Sc., M.D.

A System of Physiologic Therapeutics. Edited by SOLOMON SOLIS COHEN, A.M., M.D.

Dietotherapy and Food in Health. By NATHAN S. DAVIS, JR., A.M., M.D. Volume VI.

A Manual of Ophthalmoscopy. By J. E. JENNINGS, M.D.

The Theory and Practice of Medicine. By HENRY WALTER SYERS, M.A., M.D. Vol. II.

Diseases of the Intestines. By JOHN C. HEMMETER, M.D., Philos. D. Volume II.

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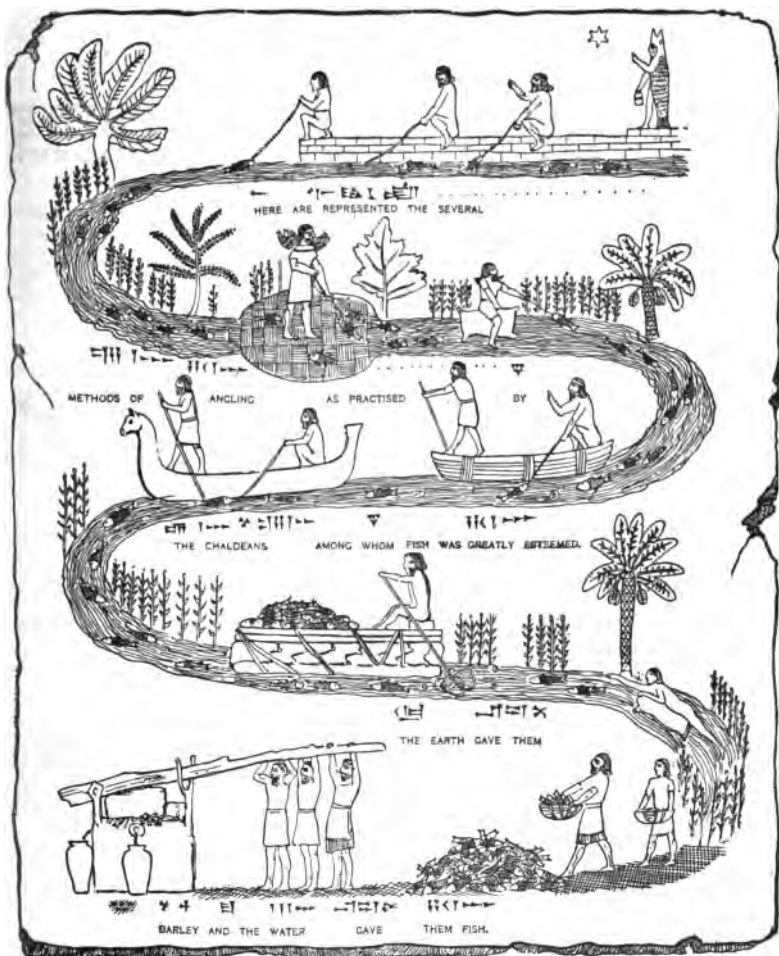
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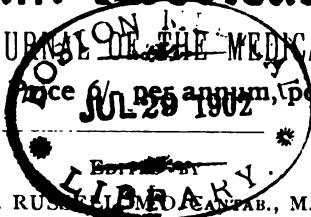
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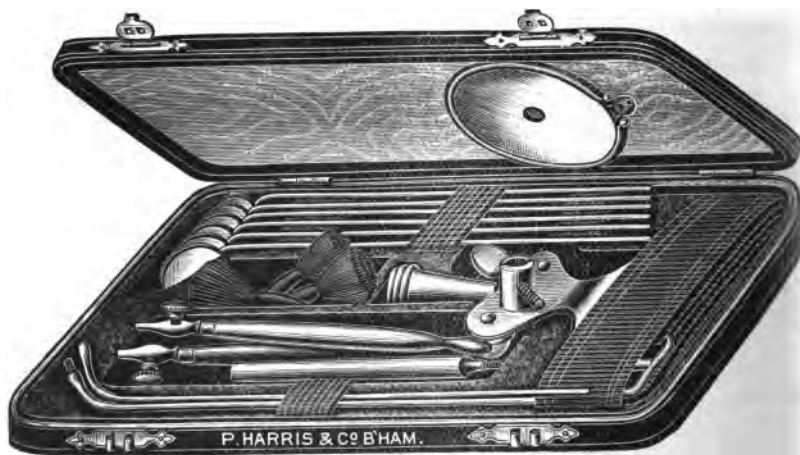
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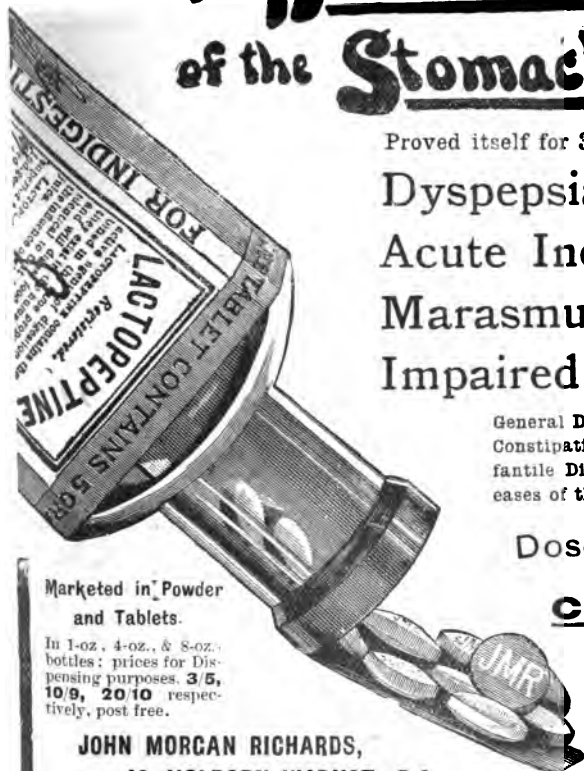
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Age next Birth- day.	Annual Premium pay- able during Life.	ANNUAL PREMIUM LIMITED TO			Age next Birth- day.
		25 Payments.	20 Payments.	15 Payments.	
21	£18 2 6	£24 8 4	£27 13 4	£33 5 10	21
22	18 7 6	24 12 6	27 17 6	33 11 8	22
23	18 11 8	24 15 10	28 1 8	33 15 10	23
24	18 15 10	24 19 2	28 5 0	34 0 0	24
25	19 0 0	25 1 8	28 8 4	34 4 2	25
26	19 5 0	25 5 0	28 12 6	34 9 2	26
27	19 11 8	25 10 0	28 18 4	34 15 10	27
28	19 19 2	25 15 10	29 4 2	35 3 4	28
29	20 6 8	26 2 6	29 11 8	35 11 8	29
30	20 15 0	26 10 0	29 19 2	36 0 10	30
31	21 5 0	26 17 6	30 7 6	36 10 10	31
32	21 14 2	27 6 8	30 17 6	37 1 8	32
33	22 5 0	27 15 10	31 7 6	37 14 2	33
34	22 15 10	28 6 8	31 18 4	38 6 8	34
35	23 8 4	28 17 6	32 10 0	39 0 0	35
36	24 1 8	29 10 0	33 2 6	39 15 0	36
37	24 16 8	30 2 6	33 15 10	40 10 0	37
38	25 12 6	30 15 10	34 9 2	41 4 2	38
39	26 9 2	31 10 0	35 4 2	42 0 0	39
40	27 7 6	32 5 0	35 19 2	42 16 8	40
41	28 6 8	33 0 10	36 15 10	43 15 0	41
42	29 6 8	33 18 4	37 13 4	44 14 2	42
43	30 9 2	34 16 8	38 12 6	45 15 0	43
44	31 12 6	35 17 6	39 13 4	46 16 8	44
45	32 17 6	37 0 0	40 15 10	48 1 8	45
46	34 4 2	38 5 0	42 0 10	49 7 6	46
47	35 14 2	39 11 8	43 7 6	50 16 8	47
48	37 6 8	41 0 10	44 17 6	52 8 4	48
49	39 0 10	42 12 6	46 9 2	54 1 8	49
50	40 15 10	44 5 10	48 2 6	55 16 8	50

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	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Payable during Life ...	1 18 0	2 1 6	2 6 10	2 14 9	3 5 9	4 1 7
Limited to 25 Payments ...	2 10 2	2 13 0	2 17 9	3 4 6	3 14 0	4 8 7

* Thus a person of 30 may secure £1,000 at death by a yearly payment, *during life*, of £20. 15s. This Premium, in any other of the Scottish Mutual Offices, would secure £800 only, instead of £1,000. The without profit rates of other Offices *differ little from these*, so that Assurers with them *virtually throw away the prospect of additions without any compensating advantage.*

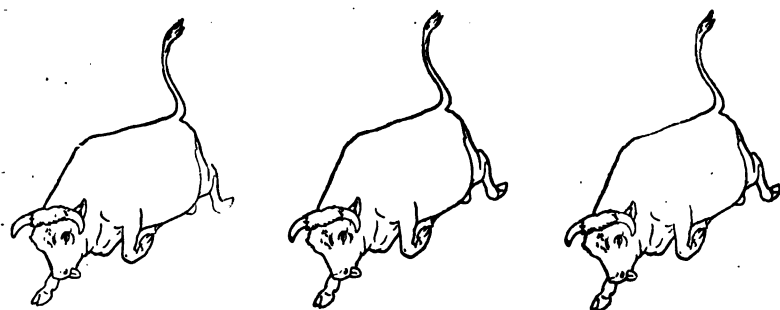
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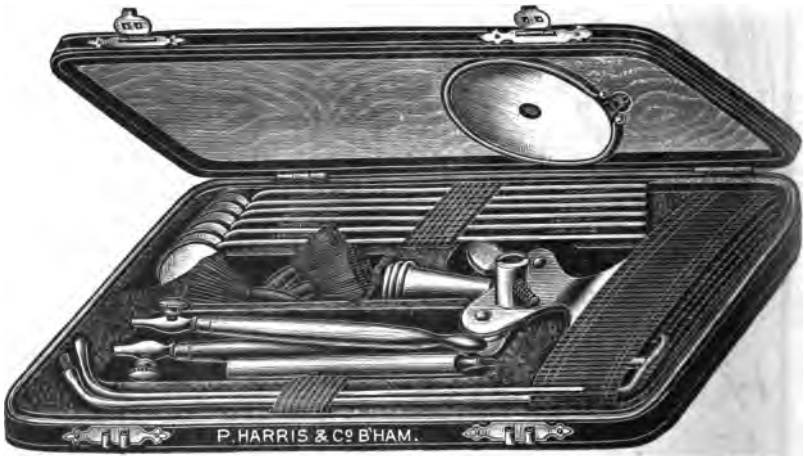
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Payable during Life	...	1 18 0	2 1 6	2 6 10	2 14 9	3 5 9	4 1 7
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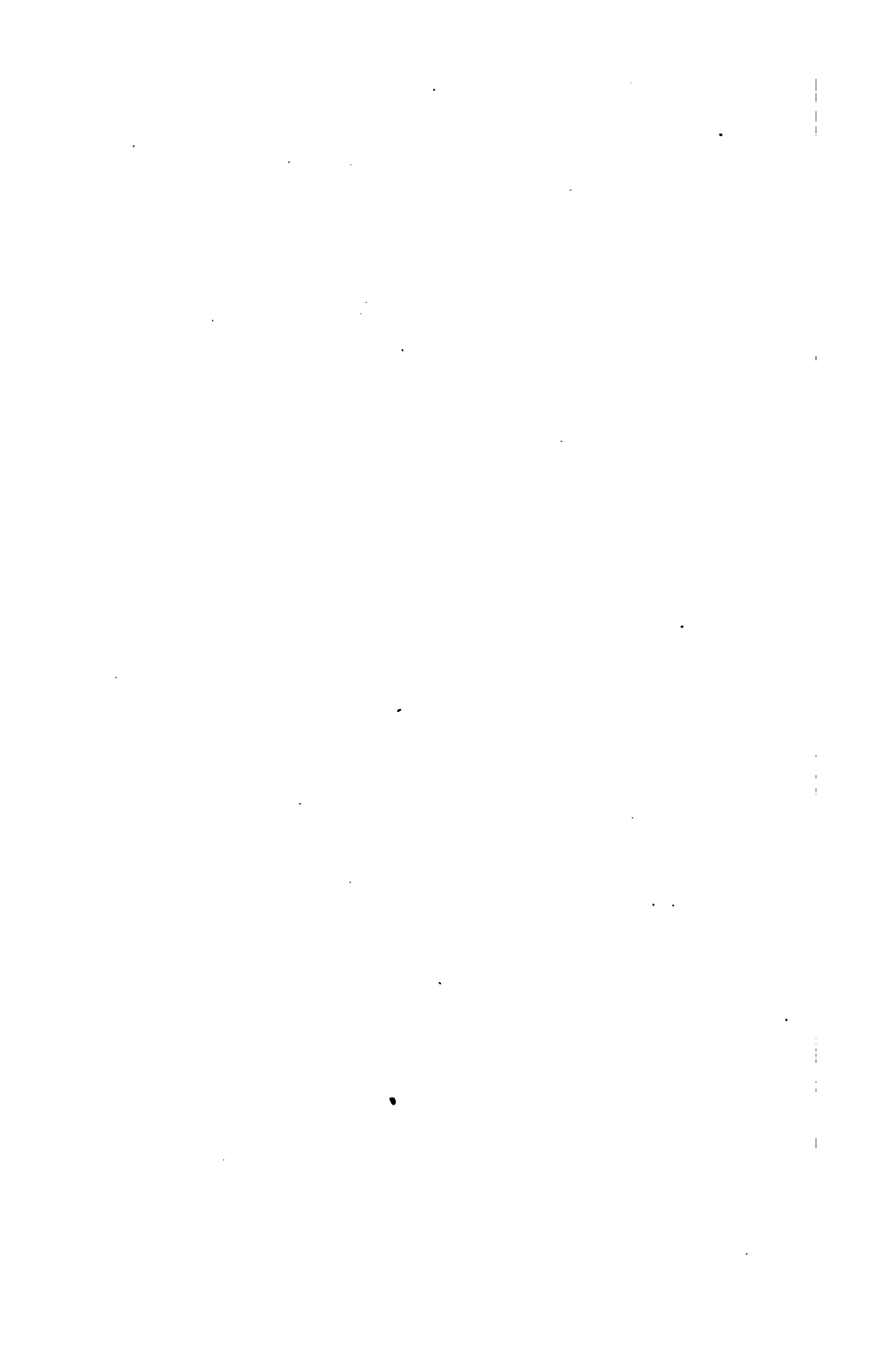
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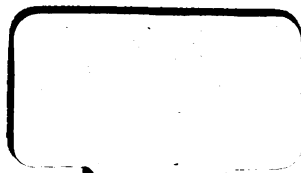
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